Contents of Volume 247

January 10, 1972

INSTRUCTIONS TO AUTHORS 1

CHEMISTRY AND METABOLISM OF MACROMOLECULES

CARLSEN, ROBERT B., AND JOHN G. PIERCE. Purification and Properties of an α-L-Fucosidase from Rat Epididymus 23

TAKETA, FUMITO, MARK H. ATTERMEIER, AND A. GRANT MAUK. Acetylated Hemoglobins in Feline Blood 33

TANAKA, SHIGEAKI, KAZUEI IGARASHI, AND AKIRA KAJI. Studies on the Action of Tetracycline and Puromycin 45

FEE, JAMES A., AND BRUCE P. GABER. Anion Binding to Bovine Erythrocyte Superoxide Dismutase. Evidence for Multiple Binding Sites with Qualitatively Different Properties 60

LIU, Y. P., AND R. E. HANDSCHUMACHER. Nitroaspara-raginase. Subunit Cross-Linkage and Altered Substrate Specificity 66

BOSMANN, H. BRUCE. Acetylcholine Receptor. I. Identification and Biochemical Characteristics of a Cholinergic Receptor of Guinea Pig Cerebral Cortex 130

CENTER, MELVIN S. Bacteriophage T7-induced Endonuclease II. Purification and Properties of the Enzyme 146

SETLOW, PETER, DOUGLAS BRUTLAG, AND ARTHUR KORNBERG. Deoxyribonucleic Acid Polymerase: Two Distinct Enzymes in One Polypeptide. I. A Proteolytic Fragment Containing the Polymerase and 3′ → 5′ Exonuclease Functions 224

SETLOW, PETER, AND ARTHUR KORNBERG. Deoxyribonucleic Acid Polymerase: Two Distinct Enzymes in One Polypeptide. II. A Proteolytic Fragment Containing the 5′ → 3′ Exonuclease Function. Restoration of Intact Enzyme Functions from the Two Proteolytic Fragments 232

BRUTLAG, DOUGLAS, AND ARTHUR KORNBERG. Enzymatic Synthesis of Deoxyribonucleic Acid. XXXVI. A Proofreading Function for the 3′ → 5′ Exonuclease Activity in Deoxyribonucleic Acid Polymerases 241

NAGAI, MASAKO, YOSHIKI SUGITA, AND YOSHIMASA YONEYAMA. Oxygen Equilibrium and Circular Dichroism of Hemoglobin-Rainier ($\alpha_2\beta_2^{146Tyr\rightarrow Cys}$) 285

KERR, CAROL, AND PAUL D. SADOWSKI. Gene 6 Exonuclease of Bacteriophage T7. I. Purification and Properties of the Enzyme 305

KERR, CAROL, AND PAUL D. SADOWSKI. Gene 6 Exonuclease of Bacteriophage T7. II. Mechanism of the Reaction 311

CHEMISTRY AND METABOLISM OF SUBSTANCES OF LOW MOLECULAR WEIGHT

RAHIMTULA, ANVER D., AND JAMES L. GAYLOR. Investigation of the Component Reactions of Oxidative Sterol Demethylation. Partial Purification of a Microsomal Sterol 4α-Carboxylic Acid Decarboxylase 9

KAZARINOFF, MICHAEL N., WHA BIN IM, JEROME A. ROTH, DONALD B. MCCORMICK, AND LEMUEL D. WRIGHT. Bacterial Degradation of Biotin. VI. Isolation and Identification of β-Hydroxy and β-Keto Compounds 75

HALLICK, RICHARD B., AND HECTOR F. DELUCA. Metabolites of Dihydrotachysterol$_3$ in Target Tissues 91

HAQUE, RIZWANUL, IAN J. TINSLEY, AND DAVID SCHMEDDING. Nuclear Magnetic Resonance Studies of Phospholipid Micelles 157

KNOCHE, HERMAN W., AND JESSUP M. SHIVELY. The Structure of an Ornithine-containing Lipid from *Thiobacillus thiooxidans* 170

KERWAR, GRACE K., ADRIENNE S. GORDON, AND H. RONALD KABACK. Mechanisms of Active Transport in Isolated Membrane Vesicles. IV. Galactose Transport by Isolated Membrane Vesicles from *Escherichia coli* 291

SHORT, STEVEN A., DAVID C. WHITE, AND H. RONALD KABACK. Active Transport in Isolated Bacterial Membrane Vesicles. V. The Transport of Amino Acids by Membrane Vesicles Prepared from *Staphylococcus aureus* 298

OXIDATION-REDUCTION AND BIOENERGETICS

MISRA, HARA P., AND I. FRIDOVICH. The Univalent Reduction of Oxygen by Reduced Flavins and Quinones 188

ENZYMOLOGY

RUBIN, CHARLES S., JACK ERLICHMAN, AND ORA M. ROSEN. Molecular Forms and Subunit Composition of a Cyclic Adenosine 3′,5′-Monophosphate-dependent Protein Kinase Purified from Bovine Heart Muscle 36

ROBERTS, JOSEPH, JOHN S. HOLCENBERG, AND WILLIAM C. DOLOWY. Isolation, Crystallization, and Properties of *Achromobacteraceae* Glutaminase-Asparaginase with Antitumor Activity 84

ANAI, MOTOAKI, HIROYUKI HARAGUCHI, AND YASUYUKI TAKAGI. An Endonuclease Associated with Bovine Plasma Albumin Fraction. I. Purification and Some Properties of the Enzyme 193

ANAI, MOTOAKI, HIROYUKI HARAGUCHI, AND YASUYUKI TAKAGI. An Endonuclease Associated with Bovine Plasma Albumin Fraction. II. The Origin and Activation Mechanism of the Enzyme 199

VILLAFRANCA, JOSEPH J., AND ROBERTA F. COLMAN. Role of Metal Ions in Reactions Catalyzed by Pig Heart Triphosphopyridine Nucleotide-dependent Isocitrate Dehydrogenase. I. Magnetic Resonance and Binding Studies of the Complexes of Enzyme, Manganous Ion, and Substrates 209

COLMAN, ROBERTA F. Role of Metal Ions in Reactions Catalyzed by Pig Heart Triphosphopyridine Nucleotide-dependent Isocitrate Dehydrogenase. II. Effect on Catalytic Properties and Reactivity of Amino Acid Residues 215

FORMAN, HENRY JAY, AND PHILIP FEIGELSON. The Effects of Allosteric Interactions on the Kinetics, Spectra, and Tertiary Structure of Pseudomonad Tryptophan Oxygenase 256

FELDMAN, RHODA I., AND HENRY WEINER. Horse Liver Aldehyde Dehydrogenase. I. Purification and Characterization 260

FELDMAN, RHODA I., AND HENRY WEINER. Horse Liver Aldehyde Dehydrogenase. II. Kinetics and Mechanistic Implications of the Dehydrogenase and Esterase Activity 267

CONTROL MECHANISMS AND BIOCHEMICAL GENETICS

KUO, JYH-FA, TEE-PING LEE, PROCERFINA L. REYES, KENNETH G. WALTON, THOMAS E. DONNELLY, JR., AND PAUL GREENGARD. Cyclic Nucleotide-dependent Protein Kinases. X. An Assay Method for the Measurement of Guanosine 3′,5′-Monophosphate in Various Biological Materials and a Study of Agents Regulating Its Levels in Heart and Brain 16

SCHRADER, WILLIAM T., AND BERT W. O'MALLEY. Progesterone-binding Components of Chick Oviduct. IV. Characterization of Purified Subunits 51

KIRKPATRICK, ANTHONY F., NURIT KAISER, RICHARD J. MILHOLLAND, AND FRED ROSEN. Glucocorticoid-binding Macromolecules in Normal Tissues and Tumors. Stabilization of the Specific Binding Component 70

DICE, J. FRED, AND ROBERT T. SCHIMKE. Turnover and Exchange of Ribosomal Proteins from Rat Liver 98

EYTAN, GERA, AND ITZHAK OHAD. Biogenesis of Chloroplast Membranes. VII. The Preservation of Membrane Homogeneity during Development of the Photosynthetic Lamellar System in an Algal Mutant (*Chlamy-*

domonas reinhardi y-1)..... 112

EYTAN, GERA, AND ITZHAK OHAD. Biogenesis of Chloroplast Membranes. VIII. Modulation of Chloroplast Lamellae Composition and Function Induced by Discontinuous Illumination and Inhibition of Ribonucleic Acid and Protein Synthesis during Greening of *Chlamydomonas reinhardi* y-1 Mutant Cells..... 122

TORNHEIM, KEITH, AND JOHN M. LOWENSTEIN. The Purine Nucleotide Cycle. The Production of Ammonia from Aspartate by Extracts of Rat Skeletal Muscle..... 162

NAKAMURA, HIROYUKI, AND JOHN W. LITTLEFIELD. Purification, Properties, and Synthesis of Dihydrofolate Reductase from Wild Type and Methotrexate-resistant Hamster Cells..... 179

DENNIS, PATRICK P. Stable Ribonucleic Acid Synthesis during the Cell Division Cycle in Slowly Growing *Escherichia coli* B/r..... 204

PURICH, DANIEL L., AND HERBERT J. FROMM. Studies on Factors Influencing Enzyme Responses to Adenylate Energy Charge..... 249

SMITH, COLLEEN M., AND SIDNEY F. VELICK. The Glyceraldehyde 3-Phosphate Dehydrogenases of Liver and Muscle. Cooperative Interactions and Conditions for Functional Reversibility..... 273

COMMUNICATION

ANTONINI, ERALDO, NAOMI MARGARET ANDERSON, AND MAURIZIO BRUNORI. Properties of the Product of Partial Photodissociation of Carbon Monoxide Hemoglobin..... 319

CORRECTION

ROBINSON, BONNIE, AND THOMAS P. ZIMMERMAN. Cation Dependence of the Transfer Reaction Catalyzed by Phenylalanyl Transfer Ribonucleic Acid Synthetase from Bakers' Yeast. **Vol. 246, 4664 (1971)**..... 322

January 25, 1972

IUPAC-IUB COMMISSION ON BIOCHEMICAL NOMENCLATURE. Abbreviated Nomenclature of Synthetic Polypeptides (Polymerized Amino Acids). Revised Recommendations 1971..... 323

CHEMISTRY AND METABOLISM OF MACROMOLECULES

MUSHAK, PAUL, AND JOSEPH E. COLEMAN. Electron Spin Resonance Studies of Spin-labeled Carbonic Anhydrase..... 373

HOSHINO, OTOMATSU, URI ZEHAVI, PIERRE SINAŸ, AND ROGER W. JEANLOZ. The Isolation and Structure Identification of a Disaccharide Containing *Manno*-muramic Acid from *Micrococcus lysodeikticus* Cell Wall..... 381

SADOWSKI, PAUL D., AND INGRID BAKYTA. T4 Endonuclease IV. Improved Purification Procedure and Resolution from T4 Endonuclease III..... 405

HOLLADAY, LESLIE A., AND ALKIS J. SOPHIANOPOULOS. Nonideal Associating Systems. I. Documentation of a New Method for Determining the Parameters from Sedimentation Equilibrium Data..... 427

DEUTSCHER, MURRAY P. Reactions at the 3′ Terminus of Transfer Ribonucleic Acid. II. Purification and Physical and Chemical Properties of Rabbit Liver Transfer Ribonucleic Acid Nucleotidyltransferase..... 450

DEUTSCHER, MURRAY P. Reactions at the 3′ Terminus of Transfer Ribonucleic Acid. III. Catalytic Properties of Two Purified Rabbit Liver Transfer Ribonucleic Acid Nucleotidyltransferases..... 459

DEUTSCHER, MURRAY P. Reactions at the 3′ Terminus of Transfer Ribonucleic Acid. IV. Extents of Normal and Anomalous Nucleotide Incorporation Catalyzed by Transfer Ribonucleic Acid Nucleotidyltransferase..... 469

MUKERJI, SUDHIR K., AND MURRAY P. DEUTSCHER. Reactions at the 3′ Terminus of Transfer Ribonucleic Acid. V. Subcellular Localization and Evidence for a Mitochondrial Transfer Ribonucleic Acid Nucleotidyltransferase..... 481

WICKNER, REED B., BARRY GINSBERG, IRA BERKOWER, AND JERARD HURWITZ. Deoxyribonucleic Acid Polymerase II of *Escherichia coli*. I. The Purification and Characterization of the Enzyme..... 489

WICKNER, REED B., BARRY GINSBERG, AND JERARD HURWITZ. Deoxyribonucleic Acid Polymerase II of *Escherichia coli*. II. Studies of the Template Requirements and the Structure of the Deoxyribonucleic Acid Product..... 498

BANNAI, SHIRO, YOSHIKI SUGITA, AND YOSHIMASA YONEYAMA. Studies on Hemoglobin from the Hagfish *Eptatretus burgeri*..... 505

IMAMURA, TAKASHI, AUSTEN RIGGS, AND QUENTIN H. GIBSON. Equilibria and Kinetics of Ligand Binding by Leghemoglobin from Soybean Root Nodules..... 521

WITTENBERG, JONATHAN B., CYRIL A. APPLEBY, AND BEATRICE A. WITTENBERG. The Kinetics of the Reactions of Leghemoglobin with Oxygen and Carbon Monoxide..... 527

KUMA, FUMIO, SUMIKO ISHIZAWA, KEIKO HIRAYAMA, AND HIROSHI NAKAJIMA. Studies on Methemoglobin Reductase. I. Comparative Studies of Diaphorases from Normal and Methemoglobinemic Erythrocytes..... 550

KUMA, FUMIO, AND HARUMI INOMATA. Studies on Methemoglobin Reductase. II. The Purification and Molecular Properties of Reduced Nicotinamide Adenine Dinucleotide-dependent Methemoglobin Reductase..... 556

CHEMISTRY AND METABOLISM OF SUBSTANCES OF LOW MOLECULAR WEIGHT

VIJAY, INDER K., AND PAUL K. STUMPF. Fat Metabolism in Higher Plants. XLVIII. Properties of Oleyl Coenzyme A Desaturase of *Carthamus tinctorius*..... 360

SINAŸ, PIERRE, MARGARET D. A. HALFORD, MOHAMMAD S. CHOUDHARY, PAUL H. GROSS, AND ROGER W. JEANLOZ. The Synthesis of the D-*Manno* Analogue of Muramic Acid, 2-Amino-3-*O*-(D-1-carboxyethyl)-2-deoxy-D-mannose..... 391

GILVARG, CHARLES, AND YEHUDA LEVIN. Response of *Escherichia coli* to Ornithyl Peptides..... 543

STRICKLAND, E. HARDIN, MEIR WILCHEK, JOSEPH HORWITZ, AND CAROLYN BILLUPS. Effects of Hydrogen Bonding and Temperature Upon the Near Ultraviolet Circular Dichroism and Absorption Spectra of Tyrosine and *O*-Methyl Tyrosine Derivatives..... 572

OXIDATION-REDUCTION AND BIOENERGETICS

CARNICERO, HILDA H., CYRIL L. MOORE, AND HENRY D. HOBERMAN. Oxidation of Glycerol 3-Phosphate by the Perfused Rat Liver..... 418

TZAGOLOFF, ALEXANDER, AND PAULINE MEAGHER. Assembly of the Mitochondrial Membrane System. VI. Mitochondrial Synthesis of Subunit Proteins of the Rutamycin-sensitive Adenosine Triphosphatase..... 594

ENZYMOLOGY

SIGMAN, DAVID S., AND ALEXANDER N. GLAZER. The Site of Auramine O Binding to Horse Liver Alcohol Dehydrogenase..... 334

MARAGOUDAKIS, MICHAEL E., HILDA HANKIN, AND JONG MYONG WASVARY. On the Mode of Action of Lipid-lowering Agents. VII. *In Vivo* Inhibition and Reversible Binding of Hepatic Acetyl Coenzyme A Carboxylase by Hypolipidemic Drugs..... 342

VOYTEK, PETER, PAULINE K. CHANG, AND WILLIAM H. PRUSOFF. Kinetic and Photochemical Studies of 3-*N*-Methyl-5-iodo-2′-deoxyuridine. Sensitization of Ultraviolet Inactivation of Thymidine Kinase by 3-*N*-Methyl-5-iodo-2′-deoxyuridine and Other Halogenated Analogs of Thymidine..... 367

GUNSALUS-MIGUEL, ANN, EDWARD A. MEIGHEN, M. ZIEGLER NICOLI, KENNETH H. NEALSON, AND J. WOODLAND HASTINGS. Purification and Properties of Bacterial Luciferases..... 398

YUAN, JAMES H., LEWIS B. BARNETT, AND BRUCE M. ANDERSON. Bull Semen Nicotinamide Adenine Dinucleotide Nucleosidase. II. Physical and Chemical Studies..... 511

YUAN, JAMES H., AND BRUCE M. ANDERSON. Bull Semen Nicotinamide Adenine Dinucleotide Nucleosidase. III. Properties of the Substate Binding Site..... 515

MIEYAL, JOHN J., MARCIA SIMON, AND ROBERT H. ABELES. Mechanism of Action of Sucrose Phosphorylase. III. The Reaction with Water and Other Alcohols..... 532

GARNER, CHARLES W., JR., AND LOUIS C. SMITH. Porcine

Pancreatic Lipase. A Glycoprotein 561
MAIN, A. RUSSELL, EMEL TARKAN, JOHN L. AULL, AND WILLIAM G. SOUCIE. Purification of Horse Serum Cholinesterase by Preparative Polyacrylamide Gel Electrophoresis 566
FITZ, ANNETTE, AND MERRILL OVERTURF. Molecular Weight of Human Angiotensin I. Lung Converting Enzyme 581
SENSABAUGH, GEORGE F., JR., AND NATHAN O. KAPLAN. A Lactate Dehydrogenase Specific to the Liver of Gadoid Fish 585

CONTROL MECHANISMS AND BIOCHEMICAL GENETICS

TAVILL, ANTHONY S., GRACE A. VANDERHOFF, AND IRVING M. LONDON. The Control of Hemoglobin Synthesis. A Comparison of the Role of Heme in Rabbit Bone Marrow and Reticulocytes 326
MANSOURI, ALI, JULIAN B. DECTER, AND ROBERT SILBER. Studies on the Regulation of One-carbon Metabolism. II. Repression-derepression of Serine hydroxymethyltransferase by Methionine in *Escherichia coli* 113-3 348
GRISWOLD, MICHAEL D., AND PHILIP P. COHEN. Alteration of Deoxyribonucleic Acid-dependent Ribonucleic Acid Polymerase Activities in Amphibian Liver Nuclei during Thyroxine-induced Metamorphosis 353
AVERNER, MELVIN J., M. LOUISE BROCK, AND JEAN-PIERRE JOST. Stimulation of Ribonucleic Acid Synthesis in Horse Lymphocytes by Exogenous Cyclic Adenosine 3′,5′-Monophosphate 413
YOSHIDA, AKIRA, AND SUMIKO WATANABE. Human Phosphoglycerate Kinase. I. Crystallization and Characterization of Normal Enzyme 440
YOSHIDA, AKIRA, SUMIKO WATANABE, SHI-HAN CHEN, ELOISE R. GIBLETT, AND L. A. MALCOLM. Human Phosphoglycerate Kinase. II. Structure of a Variant Enzyme 446

COMMUNICATIONS

LIN, CHU YUAN, AND SOMA KUMAR. Pathway for the Synthesis of Fatty Acids in Mammalian Tissues 604
BYERS, L. D., AND R. WOLFENDEN. A Potent Reversible Inhibitor of Carboxypeptidase A 606
WONG, CHI-HSIANG, TSE WEN CHANG, TSONG JEN LEE, AND CHEN CHUNG YANG. X-ray Crystallographic Study of Cobrotoxin 608
MATTHEWS, KATHLEEN S., AND R. DAVID COLE. Inhibition of the Self-Assembly of Capsid Protein from f2 Phage by Urea 609

CORRECTIONS

EXTON, J. H., G. A. ROBISON, EARL W. SUTHERLAND, AND C. R. PARK. Studies on the Role of Adenosine 3′,5′-Monophosphate in the Hepatic Actions of Glucagon and Catecholamines. **Vol. 246, 6166 (1971)** 611
WALSH, CHRISTOPHER T., AGNES SCHONBRUNN, AND ROBERT H. ABELES. Studies on the Mechanism of Action of D-Amino Acid Oxidase. Evidence for Removal of Substrate α-Hydrogen as a Proton. **Vol. 246, 6855 (1971)** 612

February 10, 1972

IUPAC COMMISSION ON THE NOMENCLATURE OF ORGANIC CHEMISTRY AND IUPAC-IUB COMMISSION ON BIOCHEMICAL NOMENCLATURE. Tentative Rules for Carbohydrate Nomenclature 613

CHEMISTRY AND METABOLISM OF MACROMOLECULES

PIZZO, SALVATORE V., MARTIN L. SCHWARTZ, ROBERT L. HILL, AND PATRICK A. MCKEE. The Effect of Plasmin on the Subunit Structure of Human Fibrinogen 636
RAWITCH, ALLEN B., AND GREGORIO WEBER. The Reversible Association of Lysozyme and Thryoglobulin. Cooperative Binding by Near-Neighbor Interactions 680
MCCLAIN, PHILIP E., AND EUGENE R. WILEY. Differential Scanning Calorimeter Studies of the Thermal Transitions of Collagen. Implications on Structure and Stability 692
WARD, D. C., AND E. REICH. Fluorescence Studies of Nucleotides and Polynucleotides. II. 7-Deazanebularin: Coding Ambiguity in Transcription with Base Pairs Containing Fewer Than Two Hydrogen Bonds 705
GRUNBERGER, D., D. C. WARD, AND E. REICH. 7-Deazanebularin. Coding Properties of Triplets and Polynucleotides 720
HUSZAR, GABOR, AND MARSHALL ELZINGA. Homologous Methylated and Nonmethylated Histidine Peptides in Skeletal and Cardiac Myosins 745
VERONESE, FRANCESCO M., DENNIS PISZKIEWICZ, AND EMIL L. SMITH. Inactivation of Bovine Glutamate Dehydrogenase by Carbamyl Phosphate and Cyanate 754
HAMEL, ERNEST, MOHAN KOKA, AND TOKUMASA NAKAMOTO. Requirement of an *Escherichia coli* 50 S Ribosomal Protein Component for Effective Interaction of the Riboome with T and G Factors and with Guanosine Triphosphate 805
FRANZE DE FERNANDEZ, MARIA THERESA, WILLIAM S. HAYWARD, AND J. THOMAS AUGUST. Bacterial Proteins Required for Replication of Phage Qβ Ribonucleic Acid. Purification and Properties of Host Factor I, a Ribonucleic Acid-Binding Protein 824
KRAUSKOPF, MANUEL, CHONG-MAW CHEN, AND JAMES OFENGAND. Interaction of Fragmented and Cross-Linked *Escherichia coli* Valine Transfer Ribonucleic Acid with T_ψ Factor-Guanosine Triphosphate Complex 842
SANDERS, MARILYN M., AND GORDON H. DIXON. The Biosynthesis of Protamine in Trout Testis. IV. Sites of Phosphorylation 851
VUUST, JENS, AND KARL A. PIEZ. A Kinetic Study of Collagen Biosynthesis 856
DEJMAL, RODGER K., AND VICTOR J. BROOKES. Insect Lipovitellin. Chemical and Physical Characteristics of a Yolk Protein from the Ovaries of *Leucophaea maderae* 869
GREEN, FLOYD A. Erythrocyte Membrane Lipids and Rh Antigen Activity 881
RIVEROS-MORENO, VALENTINA, AND JONATHAN B. WITTENBERG. The Self-Diffusion Coefficients of Myoglobin and Hemoglobin in Concentrated Solutions 895
BOOS, WINFRIED, ADRIENNE S. GORDON, ROBERT E. HALL, AND H. DONALD PRICE. Transport Properties of the Galactose-binding Protein of *Escherichia coli*. Substrate-induced Conformational Change 917
MITRA, SAMIR K., AND CHRISTOPHER J. SMITH. Salt-induced Activation of Transfer Ribonucleic Acid in the Formation of Lysyl Transfer Ribonucleic Acid by a System from Yeast 925
MOORE, RONALD J., AND JEAN D. WILSON. Localization of the Reduced Nicotinamide Adenine Dinucleotide Phosphate:Δ^4-3-ketosteroid 5α-oxidoreductase in the Nuclear Membrane of the Rat Ventral Prostate 958

CHEMISTRY AND METABOLISM OF SUBSTANCES OF LOW MOLECULAR WEIGHT

HILES, RICHARD A., AND LAVELL M. HENDERSON. The Partial Purification and Properties of Hydroxylysine Kinase from Rat Liver 646
GUTMANN, HELMUT R., AND RICHARD R. ERICKSON. The Conversion of the Carcinogen *N*-Hydroxy-2-fluorenylacetamide to *o*-Amidophenols by Rat Liver *in Vitro*. Substrate Specificity and Mechanism of the Reaction 660
ABUL-HAJJ, YUSUF J. Stereochemistry of C-1,2 Dehydrogenation of 5β-Pregnane-3,11,20-trione by *Septomyxa affinis* 686
BRDAR, B., AND E. REICH. 7-Deazanebularin. Metabolism in Cultures of Mouse Fibroblasts and Incorporation into Cellular and Viral Nucleic Acids 725
SCHACHT, JOCHEN, AND BERNARD W. AGRANOFF. Effects of Acetylcholine on Labeling of Phosphatidate and Phosphoinositides by [^{32}P]Orthophosphate in Nerve Ending Fractions of Guinea Pig Cortex 771
COLLINS, PATRICK B., AND STERLING CHAYKIN. The Management of Nicotinamide and Nicotinic Acid in the Mouse 778
MEACHAM, ROGER H., JR., EDWARD R. BOWMAN, AND

HERBERT MCKENNIS, JR. Additional Routes in the Metabolism of Nicotine to 3-Pyridylacetate. The Metabolism of Dihydrometanicotine 902

OXIDATION-REDUCTION AND BIOENERGETICS

LANOUE, KATHRYN F., JADWIGA BRYLA, AND JOHN R. WILLIAMSON. Feedback Interactions in the Control of Citric Acid Cycle Activity in Rat Heart Mitochondria 667

NISHIBAYASHI-YAMASHITA, HIROKO, CAROL CUNNINGHAM, AND EFRAIM RACKER. Resolution and Reconstitution of the Mitochondrial Electron Transport System. III. Order of Reconstitution and Requirement for a New Factor for Respiration 698

YONETANI, TAKASHI, TETSUTARO IIZUKA, TOSHIO ASAKURA, JUNYA OTSUKA, AND MASAO KOTANI. Analysis of Thermal Equilibria between High Spin and Low Spin States in Mesohemoproteins 863

ENZYMOLOGY

MAVIS, RICHARD D., AND P. ROY VAGELOS. The Effect of Phospholipid Fatty Acid Composition on Membranous Enzymes in *Escherichia coli* 652

FLOSS, H. G., D. K. ONDERKA, AND M. CARROLL. Stereochemistry of the 3-Deoxy-D-arabino-heptulosonate 7-Phosphate Synthetase Reaction and the Chorismate Synthetase Reaction 736

KANDA, MASAYUKI, FRANK O. BRADY, K. V. RAJAGOPALAN, AND PHILIP HANDLER. Studies on the Dissociation of Flavin Adenine Dinucleotide from Metalloflavoproteins 765

CROSS, DALLAS G. Ultraviolet Spectrophotometric Characterization of a Glutamate Dehydrogenase-reduced Coenzyme-α-Ketoglutarate Complex 784

SATO, FUMIKO, YOSHINARI TAKAGI, AND MIKIO SHIKITA. 20α-Hydroxysteroid Dehydrogenase of Porcine Testes Purification and Properties 815

HOPPEL, CHARLES L., AND ROBERT J. TOMEC. Carnitine Palmityltransferase. Location of Two Enzymatic Activities in Rat Liver Mitochondria 832

NEALSON, KENNETH H., AND J. WOODLAND HASTINGS. The Inhibition of Bacterial Luciferase by Mixed Function Oxidase Inhibitors 888

ALLEN, S. H. GEORGE, AND JAYGONDA R. PATIL. Studies on the Structure and Mechanism of Action of the Malate-Lactate Transhydrogenase 909

AINSLIE, G. R., JR., AND W. W. CLELAND. Isotope Exchange Studies on Liver Alcohol Dehydrogenase with Cyclohexanol and Cyclohexanone as Reactants 946

YOSHIDA, AKIRA, AND MEI LIN. NH_2-Terminal Formylmethionine and NH_2-Terminal Methionine-cleaving Enzymes in Rabbits 952

CONTROL MECHANISMS AND BIOCHEMICAL GENETICS

DJALDETTI, MEIR, HARVEY PRIESLER, PAUL MARKS, AND RICHARD A. RIFKIND. Erythropoietin Effects on Fetal Mouse Erythroid Cells. II. Nucleic Acid Synthesis and the Erythropoietin-sensitive Cell 731

WEISS, IRA W., KEITH MORGAN, AND JAMES M. PHANG. Cyclic Adenosine Monophosphate-stimulated Transport of Amino Acids in Kidney Cortex 760

NAZAR, ROSS N., AND J. TZE-FEI WONG. Nucleotide Changes and the Regulation of Ribonucleic Acid Accumulation during Growth Rate Shifts in *Escherichia coli* 790

NAZAR, ROSS N., LINDA A. TYFIELD, AND J. TZE-FEI WONG. Regulation of Ribonucleic Acid Accumulation *in Vivo* by Nucleoside Triphosphates 798

HEIMBERG, MURRAY, AND HENRY G. WILCOX. The Effect of Palmitic and Oleic Acids on the Properties and Composition of the Very Low Density Lipoprotein Secreted by the Liver 875

MALEY, GLADYS F., DON U. GUARINO, AND FRANK MALEY. $T2r^+$ Bacteriophage-induced Enzymes. I. The Purification and Properties of Deoxycytidylate Deaminase 931

MALEY, GLADYS F., ROBERT MACCOLL, AND FRANK MALEY. $T2r^+$ Bacteriophage-induced Enzymes. II. The Subunit Structure of Deoxycytidylate Deaminase 940

COMMUNICATIONS

STURTEVANT, JULIAN M. The Enthalpy of Hydrolysis of Acetylcholine 968

KIBLER, ROBERT F., PETER K. Re', SARAH MCKNEALLY, RAYMOND SHAPIRA, AND MICHALE E. KEELING. Biological Activity of an Encephalitogenic Fragment in the Monkey 969

SAIER, MILTON H., JR., AND SAUL ROSEMAN. Inducer Exclusion and Repression of Enzyme Synthesis in Mutants of *Salmonella typhimurium* Defective in Enzyme I of the Phosphoenolpyruvate: Sugar Phosphotransferase System 972

February 25, 1972

CUMULATIVE AUTHOR INDEX. NUMBERS 1 THROUGH 4 iii

IUPAC-IUB COMMISSION ON BIOCHEMICAL NOMENCLATURE. Symbols for Amino-Acid Derivatives and Peptides. Recommendations (1971) 977

CHEMISTRY AND METABOLISM OF MACROMOLECULES

KARLSSON, F. ANDERS, PER A. PETERSON, AND INGEMAR BERGGÅRD. A Structural Feature of Human Immunologlobulin Light Chains. Two Compact Domains Connected by a Small Switch Region 1065

ALOJ, SALVATORE, AND HAROLD EDELHOCH. The Molecular Properties of Human Growth Hormone 1146

ARNOLD, WILFRED NIELS. The Structure of the Yeast Cell Wall. Solubilization of a Marker Enzyme, β-Fructofuranosidase, by the Autolytic Enzyme System 1161

MAUCK, JOHN, AND LUIS GLASER. On the Mode of *in Vivo* Assembly of the Cell Wall of *Bacillus subtilis* 1180

WHITE, FREDRIC P., WILLIAM J. MCBRIDE, HENRY R. MAHLER, AND WALTER J. MOORE. Subcellular Distribution of Proteins Synthesized in Slices of Rat Cerebral Cortex 1247

DEVOR, K. A., R. A. MAKULA, P. H. PATTERSON, M. KENNEDY, G. DECKER, J. W. GREENAWALT, AND W. J. LENNARZ. Studies on the Membranes of Bacilli. II. Characterization of a Novel Protein of a *Bacillus* Species 1288

CHEMISTRY AND METABOLISM OF SUBSTANCES OF LOW MOLECULAR WEIGHT

HAMMARSTRÖM, SVEN, AND BENGT SAMMUELSSON. On the Biosynthesis of Cerebrosides Containing 2-Hydroxy Acids. Mass Spectrometric Evidence for Biosynthesis via the Ceramide Pathway 1001

SMITH, WILLIAM L., AND WILLIAM E. M. LANDS. Oxygenation of Unsaturated Fatty Acids by Soybean Lipoxygenase 1038

RAGHAVAN, SRINIVASA, AND JULIAN N. KANFER. Ceramide Galactoside of Enriched Neuronal and Glial Fractions from Rat Brain 1055

IZZO, JOSEPH L., ANGELA RONCONE, MARY JANE IZZO, RICHARD FOLEY, AND JOHN W. BARTLETT. Degradation of ^{131}I-Insulins by Rat Liver. Studies *in Vitro* 1219

MUNRO, GEORGE F., KITTY HERCULES, JANET MORGAN, AND WALTER SAUERBIER. Dependence of the Putrescine Content of *Escherichia coli* on the Osmotic Strength of the Medium 1272

LAMB, ROBERT G., AND HAROLD J. FALLON. Inhibition of Monoacylglycerophosphate Formation by Chlorophenoxyisobutyrate and β-Benzalbutyrate 1281

OXIDATION-REDUCTION AND BIOENERGETICS

YU, C. A., LINDA YU, AND TSOO E. KING. Preparation and Properties of Cardiac Cytochrome c_1 1012

WEDLER, F. C., AND P. D. BOYER. Substrate Binding and Reaction Intermediates of Glutamine

Synthetase (*Escherichia coli* W) as Studied by Isotope Exchanges ... 984

WEDLER, F. C., AND P. D. BOYER. Action Patterns of Feedback Modifiers on Equilibrium Exchanges and Applications to Glutamine Synthetase (*Escherichia coli* W) ... 993

HOWARD, JAMES BRYANT, AND FREDERICK H. CARPENTER. L-Asparaginase from *Erwinia carotovora*. Substrate Specificity and Enzymatic Properties ... 1020

SHIFRIN, SIDNEY, AND BARBARA J. GROCHOWSKI. L-Asparaginase from *Escherichia coli* B. Succinylation and Subunit Interactions ... 1048

HONIKEL, KARL O., AND NEIL B. MADSEN. Comparison of the Absorbance Spectra and Fluorescence Behaviour of Phosphorylase *b* with That of Model Pyridoxal Phosphate Derivatives in Various Solvents. 1057

FENSBLAU, ALLAN. Structure-Function Studies on Glyceraldehyde 3-Phosphate Dehydrogenase. IV. Subunit Interactions of the Rabbit Muscle and Yeast Enzymes ... 1074

LEARY, T. RICHARD, AND GUNTER B. KOHLHAW. α-Isopropylmalate Synthase from *Salmonella typhimurium*. Analysis of the Quaternary Structure and Its Relation to Function ... 1089

ROBINSON, JAMES L., AND IRWIN A. ROSE. The Proton Transfer Reactions of Muscle Pyruvate Kinase ... 1096

TAMIR, HADASSAH, AND P. R. SRINIVASAN. Studies of the Mechanism of Anthranilate Synthase. Evidence for an Acyl-enzyme ... 1153

BLACKBURN, MICHAEL N., JOHN M. CHIRGWIN, GORDON T. JAMES, THOMAS D. KEMPE, THOMAS F. PARSONS, ADELE M. REGISTER, KLAUS D. SCHNACKERZ, AND ERNST A. NOLTMANN. Pseudoisoenzymes of Rabbit Muscle Phosphoglucose Isomerase ... 1170

WAGNER, FRED W., STELLA H. WILKES, AND JOHN M. PRESCOTT. Specificity of *Aeromonas* Aminopeptidase toward Amino Acid Amides and Dipeptides ... 1208

VIELLE-BREITBURD, FRANÇOISE, AND GÉRARD ORTH. Rabbit Liver L-Arginase. Purification, Properties, and Subunit Structure ... 1227

BRYAN, L. E., W. E. RAZZELL, AND J. N. CAMPBELL. Purification, Modification during Purification, and Characterization of a Deoxyribonuclease from *Pseudomonas aeruginosa* ... 1236

TILDON, J. TYSON, AND JAMES W. OGILVIE. The Esterase Activity of Bovine Mercaptalbumin. The Reaction of the Protein with *p*-Nitrophenyl Acetate ... 1265

BERNSTEIN, ROBERT S., AND ROSEMARY SCHRAER. Purification and Properties of an Avian Carbonic Anhydrose from the Erythrocytes of *Gallus domesticus* ... 1306

BARDEN, ROLAND E., CHIEN-HUNG FUNG, MERTON F. UTTER, AND MICHAEL C. SCRUTTON. Pyruvate Carboxylase from Chicken Liver. Steady State Kinetic Studies Indicate a "Two-Site" Ping-Pong Mechanism ... 1323

CONTROL MECHANISMS AND BIOCHEMICAL GENETICS

LI, SHOEI-LUNG, AND CHARLES YANOFSKY. Amino Acid Sequences of Fifty Residues from the Amino Termini of the Tryptophan Synthetase α Chains of Several Enterobacteria ... 1031

BRENNER, MICHAEL, AND BRUCE N. AMES. Histidine Regulation in *Salmonella typhimurium*. IX. Histidine Transfer Ribonucleic Acid of the Regulatory Mutants ... 1080

STEINER, ALTON L., CHARLES W. PARKER, AND DAVID M. KIPNIS. Radioimmunoassay for Cyclic Nucleotides. I. Preparation of Antibodies and Iodinated Cyclic Nucleotides ... 1106

STEINER, ALTON L., ANTHONY S. PAGLIARA, LEWIS R. CHASE, AND DAVID M. KIPNIS. Radioimmunoassay for Cyclic Nucleotides. II. Adenosine 3′,5′-Monophosphate and Guanosine 3′,5′-Monophosphate in Mammalian Tissues and Body Fluids ... 1114

STEINER, ALTON L., JAMES A. FERRENDELLI, AND DAVID M. KIPNIS. Radioimmunoassay for Cyclic Nucleotides. III. Effect of Ischemia, Changes during Development and Regional Distribution of Adenosine 3′,5′-Monophosphate and Guanosine 3′,5′-Monophosphate in Mouse Brain ... 1121

GIELEN, JACQUES E., FRANCINE M. GOUJON, AND DANIEL W. NEBERT. Genetic Regulation of Aryl Hydrocarbon Hydroxylase Induction. II. Simple Mendelian Expression in Mouse Tissues *in Vivo* ... 1125

TARUI, SEIICHIRO, NORIO KONO, AND KOSAKU UYEDA. Purification and Properties of Rabbit Erythrocyte Phosphofructokinase ... 1138

KAHLENBERG, ARTHUR, AND BATYA BANJO. Involvement of Phospholipids in the D-Glucose Uptake Activity of Isolated Human Erythrocyte Membranes. 1156

BUSSE, DIETRICH, LOUIS J. ELSAS, AND LEON E. ROSENBERG. Uptake of D-Glucose by Renal Tubule Membranes. I. Evidence for Two Transport Systems ... 1188

PERMUTT, M. ALAN, AND DAVID M. KIPNIS. Insulin Biosynthesis. I. On the Mechanism of Glucose Stimulation ... 1194

PERMUTT, M. ALAN, AND DAVID M. KIPNIS. Insulin Biosynthesis. II. Effect of Glucose on Ribonucleic Acid Synthesis in Isolated Rat Islets ... 1200

GOLDFINE, IRA D., JESSE ROTH, AND LUTZ BIRNBAUMER. Glucagon Receptors in β-Cells. Binding of ^{125}I-Glucagon and Activation of Adenylate Cyclase ... 1211

DEHLINGER, PETER J., AND ROBERT T. SCHIMKE. Effects of Phenobarbital, 3-Methylcholanthrene, and Hematin on the Synthesis of Protein Components of Rat Liver Microsomal Membranes ... 1257

KATZENELLENBOGEN, BENITA S., AND JACK GORSKI. Estrogen Action *in Vitro*. Induction of the Synthesis of a Specific Uterine Protein ... 1299

COMMUNICATIONS

MCPHERSON, ALEXANDER, JR., AND ALEXANDER RICH. Preliminary X-ray Study of Rabbit Muscle Pyruvate Kinase ... 1334

POLAKIS, S. E., RAS B. GUCHHAIT, AND M. DANIEL LANE. On the Possible Involvement of a Carbonyl Phosphate Intermediate in the Adenosine Triphosphate-dependent Carboxylation of Biotin ... 1335

HINKLE, PETER C., JUNG JA KIM, AND EFRAIM RACKER. Ion Transport and Respiratory Control in Vesicles Formed from Cytochrome Oxidase and Phospholipids ... 1338

WEE, TIMPLE G., JANET DAVIS, AND PERRY A. FREY. Studies on the Mechanism of Action of Uridine Diphosphate-galactose-4-epimerase. I. An Ambiguity in the Chemical Trapping of a Proposed Keto-Intermediate by NaB^3H_4 ... 1339

March 10, 1972

CHEMISTRY AND METABOLISM OF MACROMOLECULES

BUONOCORE, VINCENZO, AND SONDRA SCHLESINGER. Interactions of Tyrosyl Transfer Ribonucleic Acid Synthetase from *Escherichia coli* with Its Substrates. Inhibition by Transfer Ribonucleic Acid ... 1343

KAMINSKY, LAURENCE S., FOOK CHOY YONG, AND TSOO E. KING. Circular Dichroism Studies of the Perturbations of Cytochrome *c* by Alcohols ... 1354

EDSTROM, RONALD D. Structure of a Low Molecular Weight Form of Glycogen Isolated from the Liver in a Case of Glycogen Storage Disease ... 1360

SMITH, LINDA L., CHARLES F. PLESE, BETTY P. BARTON, SAMUEL CHARACHE, JERRY B. WILSON, AND TITUS H. J. HUISMAN. Subunit Dissociation of the Abnormal Hemoglobins G Georgia (α_2^{88}Leu(G2)β_2) and Rampa (α_2^{88}Ser(G2)β_2) ... 1433

HATHAWAY, GARY M. Interaction of a Self-Associating Protein with Its Cofactor ... 1440

BLOMBÄCK, BIRGER, BIRGIT HESSEL, SADAAKI IWANAGA, JAN REUTERBY, AND MARGARETA BLOMBÄCK. Pri-

mary Structure of Human Fibrinogen and Fibrin. I. Cleavage of Fibrinogen with Cyanogen Bromide. Isolation and Characterization of NH_2-terminal Fragments of the α("A") Chain 1496

HVIDT, AASE, AND KNUT WALLEVIK. Conformational Changes in Human Serum Albumin as Revealed by Hydrogen-Deuterium Exchange Studies 1530

LONDON, JACQUELINE, AND MICHEL E. GOLDBERG. The Tryptophanase from *Escherichia coli* K-12. I. Purification, Physical Properties, and Quaternary Structure 1566

KAGAMIYAMA, HIROYUKI, HIROSHI WADA, HIROSHI MATSUBARA, AND ESMOND E. SNELL. The Chemical Structure of Tryptophanase from *Escherichia coli*. II. The Structure of Tryptophanase Monomer 1571

KAGAMIYAMA, HIROYUKI, HIROSHI MATSUBARA, AND ESMOND E. SNELL. The Chemical Structure of Tryptophanase from *Escherichia coli*. III. Isolation and Amino Acid Sequence of the Tryptic Peptides 1576

KABASAWA, IZUMI, AND C. H. W. HIRS. Structural Studies with the Glycopeptides from Porcine Pancreatic Ribonuclease 1610

WONG, ROSIE C., YASUSHI NAKAGAWA, AND GERTRUDE E. PERLMANN. Studies on the Nature of the Inhibition by Gossypol of the Transformation of Pepsinogen to Pepsin 1625

CHEMISTRY AND METABOLISM OF SUBSTANCES OF LOW MOLECULAR WEIGHT

ESDERS, THEODORE W., AND ROBLEY J. LIGHT. Glucosyl- and Acetyltransferases Involved in the Biosynthesis of Glycolipids from *Candida bogoriensis* 1375

OKUYAMA, HARUMI, AND WILLIAM E. M. LANDS. Variable Selectivities of Acyl Coenzyme A:Monoacylglycerophosphate Acyltransferases in Rat Liver 1414

WATT, WARD B. Xanthine Dehydrogenase and Pteridine Metabolism in *Colias* Butterflies 1445

LUTTRELL, BRIAN, RICHARD B. HOCHBERG, W. ROSS DIXON, PATRICK D. MCDONALD, AND SEYMOUR LIEBERMAN. Studies on the Biosynthetic Conversion of Cholesterol into Pregnenolone. Side Chain Cleavage of a *t*-Butyl Analog 20α-Hydroxycholesterol, (20R)-20-*t*-Butyl-5-pregnene-3β,20-diol, a Compound Completely Substituted at C-22 1462

KELKER, NORMAN E., RONALD A. SIMKINS, AND RICHARD L. ANDERSON. Pathway of L-Sorbose Metabolism in *Aerobacter aerogenes* 1479

BASU, MANJU, AND SUBHASH BASU. Enzymatic Synthesis of a Tetraglycosylceramide by a Galactosyltransferase from Rabbit Bone Marrow 1489

KOBATA, AKIRA, AND VICTOR GINSBURG. Oligosaccharides of Human Milk. III. Isolation and Characterization of a New Hexasaccharide, Lacto-*N*-hexaose 1525

OXIDATION-REDUCTION AND BIOENERGETICS

GRIFFITHS, MARIE M., AND CARL BERNOFSKY. Purification and Properties of Reduced Diphosphopyridine Nucleotide Kinase from Yeast Mitochondria 1473

ABRAMS, ADOLPH, JEFFREY B. SMITH, AND CARL BARON. Carbodiimide-resistant Membrane Adenosine Triphosphatase in Mutants of *Streptococcus faecalis*. I. Studies of the Mechanism of Resistance 1484

LAMBOWITZ, ALAN M., CAROLYN W. SLAYMAN, CLIFFORD L. SLAYMAN, AND WALTER D. BONNER, JR. The Electron Transport Components of Wild Type and *Poky* Strains of *Neurospora crassa* 1536

ENZYMOLOGY

GUSTAFSON, G. L., AND J. E. GANDER. Uridine Diphosphate Glucose Pyrophosphorylase from *Sorghum vulgare*. Purification and Kinetic Properties 1387

KLEE, CLAUDE B. Metal Activation of Histidine Ammonia-Lyase. Metal Ion-Sulfhydryl Group Relationship 1398

DAVIS, BARRY P., ENRICO RAMPINI, AND SUNG L. HSIA. 17β-Hydroxysteroid Dehydrogenase of Rat Skin. Substrate Specificity and Inhibitors 1407

DULANEY, JOHN T., AND OSCAR TOUSTER. Isolation of Deoxyribonuclease II of Rat Liver Lysosomes 1424

HAROZ, R. K., J. S. TWU, AND R. K. BRETTHAUER. Purification and Properties of a Yeast Nucleotide Pyrophosphatase 1452

LISSETT, MARIE N. Biosynthesis of 4-Thiouridylate. Participation of a Sulfurtransferase Containing Pyridoxal 5′-Phosphate 1458

EDWARDS, PETER A., AND R. GORDON GOULD. Turnover Rate of Hepatic 3-Hydroxy-3-methylglutaryl Coenzyme A Reductase as Determined by Use of Cycloheximide 1520

ROSENBERRY, TERRONE L., HAI WON CHANG, AND YUEH T. CHEN. Purification of Acetylcholinesterase by Affinity Chromatography and Determination of Active Site Stoichiometry 1555

EDMONDSON, DALE, VINCENT MASSEY, GRAHAM PALMER, LOWRIE M. BEACHAM, III, AND GERTRUDE B. ELION. The Resolution of Active and Inactive Xanthine Oxidase by Affinity Chromatography 1597

WICKNER, REED B., AND HERBERT TABOR. *N*-Formimino-L-glutamate Iminohydrolase from Histidine-adapted *Pseudomonas*. Purification and Properties 1605

CONTROL MECHANISMS AND BIOCHEMICAL GENETICS

WHITNEY, P. A., AND T. G. COOPER. Urea Carboxylase and Allophanate Hydrolase. Two Components of Adenosine Triphosphate:Urea Amido-Lyase in *Saccharomyces cerevisiae* 1349

SPELSBERG, THOMAS C., ALAN W. STEGGLES, FRANK CHYTIL, AND BERT W. O'MALLEY. Progesterone-binding Components of Chick Oviduct. V. Exchange of Progesterone-binding Capacity From Target To Nontarget Tissue Chromatins 1368

LERNER, EDITH, AUSTIN L. SHUG, CHARLES ELSON, AND EARL SHRAGO. Reversible Inhibition of Adenine Nucleotide Translocation by Long Chain Fatty Acyl Coenzyme A Esters in Liver Mitochondria of Diabetic and Hibernating Animals 1513

RENNIE, PAUL, AND NICHOLAS BRUCHOVSKY. *In Vitro* and *in Vivo* Studies on the Functional Significance of Androgen Receptors in Rat Prostate 1546

KANE, JAMES F., WALTER M. HOLMES, AND ROY A. JENSEN. Metabolic Interlock. The Dual Function of a Folate Pathway Gene as an Extra-Operonic Gene of Tryptophan Biosynthesis 1587

COMMUNICATION

OTTEN, JACQUES, JOHN BADER, GEORGE S. JOHNSON, AND IRA PASTAN. A Mutation in a Rous Sarcoma Virus Gene that Controls Adenosine 3′,5′-Monophosphate Levels and Transformation 1632

March 25, 1972

HASTINGS, A. BAIRD, Donald Dexter Van Slyke 1635

CHEMISTRY AND METABOLISM OF MACROMOLECULES

BARNES, KIMBALL P., JOHN R. WARREN, AND JULUIS A. GORDON. Effect of Urea on the Circular Dichroism of Lysozyme 1708

OLSON, JOHN S., AND QUENTIN H. GIBSON. The Reaction of *n*-Butyl Isocyanide with Human Hemoglobin. II. The Ligand-Binding Properties of the α and β Chains within Deoxyhemoglobin 1713

JANSSEN, LAMBERT H. M., SIMON H. DE BRUIN, AND GERARD A. J. VAN OS. Titration Behavior of Histidines in Human, Horse, and Bovine Hemoglobins 1743

SWAMINATHAN, N., KHUSHI L. MATTA, LARRY A. DONOSO, AND OM P. BAHL. Glycosidases of *Aspergillus niger*. III. Purification and Characterization of 1,2-α-Mannosidase 1775

MATTA, KHUSHI L., AND OM P. BAHL. Glycosidases of *Aspergillus niger*. IV. Purification and Characterization of α-Mannosidase 1780

GANGULY, PANKAJ. Isolation and Some Properties of Fibrinogen from Human Blood Platelets 1809

ARIMA, TERUKATSU, MARY JANE SPIRO, AND ROBERT G. SPIRO. Studies on the Carbohydrate Units of Thyroglobulin. Evaluation of Their Microheterogeneity in the Human and Calf Proteins 1825

ARIMA, TERUKATSU, AND ROBERT G. SPIRO. Studies on the Carbohydrate Units of Thyroglobulin. Struc-

ture of the Mannose-*N*-acetylglucosamine Unit (Unit A) of the Human and Calf Proteins 1836
GOLDMARK, PETER J., AND STUART LINN. Purification and Properties of the *recBC* DNase of *Escherichia coli* K-12 1849
COTTON, RICHARD G. H., AND IRVING P. CRAWFORD. Tryptophan Synthetase β_2 Subunit. Application of Genetic Analysis to the Study of Primary Structure .. 1883

CHEMISTRY AND METABOLISM OF SUBSTANCES OF LOW MOLECULAR WEIGHT

HILL, ROBERT E., FREDERICK J. ROWELL, RAM NATH GUPTA, AND IAN D. SPENSER. Biosynthesis of Vitamin B_6 1869
NORMAN, A. W., R. A. DEMEL, B. DE KRUYFF, AND L. L. M. VAN DEENEN. Studies on the Biological Properties of Polyene Antibiotics. Evidence for the Direct Interaction of Filipin with Cholesterol 1918

OXIDATION-REDUCTION AND BIOENERGETICS

NELSON, NATHAN, AND JOSEPH NEUMANN. Isolation of a Cytochrome b_6-f Particle from Chloroplasts 1817
WU, CHUEN-SHANG C., PATRICIA DUFFY, AND W. DUANE BROWN. Interaction of Myoglobin and Cytochrome *c* 1899

ENZYMOLOGY

MARSHALL, MARGARET, AND PHILIP P. COHEN. Ornithine Transcarbamylase from *Streptococcus faecalis* and Bovine Liver. I. Isolation and Subunit Structure 1641
MARSHALL, MARGARET, AND PHILIP P. COHEN. Ornithine Transcarbamylase from *Streptococcus faecalis* and Bovine Liver. II. Multiple Binding Sites for Carbamyl-P and L-Norvaline, Correlation with Steady State Kinetics 1654
MARSHALL, MARGARET, AND PHILIP P. COHEN. Ornithine Transcarbamylase from *Streptococcus faecalis* and Bovine Liver. III. Effects of Chemical Modifications of Specific Residues on Ligand Binding and Enzymatic Activity 1669
REDDY, K. NAGENDRA NATH, AND GABOR MARKUS. Mechanism of Activation of Human Plasminogen by Streptokinase. Presence of Active Center in Streptokinase-Plasminogen Complex 1683
UYEDA, KOSAKU. Studies on the Fructose 1-Phosphate Kinase Activity of Rabbit Muscle Phosphofructokinase 1692
LU, ANTHONY Y. H., RONALD KUNTZMAN, SUSAN WEST, MARTIN JACOBSON, AND ALLAN H. CONNEY. Reconstituted Liver Microsomal Enzyme System that Hydroxylates Drugs, Other Foreign Compounds, and Endogenous Substrates. II. Role of the Cytochrome P-450 and P-448 Fractions in Drug and Steroid Hydroxylations 1727
HOCH, SALLIE O'NEIL, AND R. D. DEMOSS. Tryptophanase from *Bacillus alvei*. I. Subunit Structure 1750
HARVEY, RICHARD A., JULIE I. HERON, AND GERHARD W. E. PLAUT. Regulation of Diphosphopyridine Nucleotide-linked Isocitrate Dehydrogenase from Bovine Heart. Binding of Inhibitory Nucleotides .. 1801
WHITELEY, H. R., AND R. A. PELROY. Purification and Properties of Phosphotransacetylase from *Veillonella alcalescens* 1911

CONTROL MECHANISMS AND BIOCHEMICAL GENETICS

SILBERT, DAVID F., MILTON COHEN, AND MARK E. HARDER. The Effect of Exogenous Fatty Acids on Fatty Acid Metabolism in *Escherichia coli* K-12 1699
GROOT, GERT S. P., WILLIAM ROUSLIN, AND GOTTFRIED SCHATZ. Promitochondria of Anaerobically Grown Yeast. VI. Effect of Oxygen on Promitochondrial Protein Synthesis 1735
SHORT, JOHN, ROBERT F. BROWN, ALENA HUSAKOVA, JOHN R. GILBERTSON, REUBEN ZEMEL, AND IRVING LIEBERMAN. Induction of Deoxyribonucleic Acid Synthesis in the Liver of the Intact Animal 1757
PEKARTHY, JAMES M., JOHN SHORT, ALBERT I. LANSING, AND IRVING LIEBERMAN. Function and Control of Liver Alkaline Phosphatase 1767
ONTKO, JOSEPH A. Metabolism of Free Fatty Acids in Isolated Liver Cells. Factors Affecting the Partition between Esterification and Oxidation 1788
LEWIS, JAMES C. Germination of Bacterial Spores by Calcium Chelates of Dipicolinic Acid Analogues 1861
CURNOW, RANDALL T., AND FRANK Q. NUTTALL. Effect of Prostaglandin E_1 Administration on the Liver Glycogen Synthetase and Phosphorylase Systems .. 1892
KUPOR, S. ROBERT, AND DAN G. FRAENKEL. Glucose Metabolism in 6-Phosphogluconolactonase Mutants of *Escherichia coli* 1904
TAYLOR, A. T., M. A. STAFFORD, AND O. W. JONES. Properties of Thymidine Kinase Partially Purified from Human Fetal and Adult Tissue 1930
MURTHY, M. R. VENKATACHALA. Free and Membrane-bound Ribosomes of Rat Cerebral Cortex. Protein Synthesis *in Vivo* and *in Vitro* 1936
MURTHY, M. R. VENKATACHALA. Free and Membrane-bound Ribosomes of Rat Cerebral Cortex. Metabolism of Ribosomal and Messenger Ribonucleic Acid 1944

COMMUNICATION

PORTER, DAVID J. T., JUDITH G. VOET, AND HAROLD J. BRIGHT. Nitromethane. A Novel Substrate for D-Amino Acid Oxidase 1951

April 10, 1972

CHEMISTRY AND METABOLISM OF MACROMOLECULES

HWANG, PETER, HARVEY GUYDA, AND HENRY FRIESEN. Purification of Human Prolactin 1955
HOLLADAY, LESLIE A., AND ALKIS J. SOPHIANOPOULOS. Association Sites of Lysozyme in Solution. II. Concentration Dependence of the Near-Ultraviolet Circular Dichroism 1976
HOLMGREN, ARNE. Tryptophan Fluorescence Study of Conformational Transitions of the Oxidized and Reduced Form of Thioredoxin 1992
CHAIKEN, IRWIN M. Chemical Studies of Structural Features in Staphylococcal Nuclease-T′ 1999
OFENGAND, JAMES, AND CHONG-MAW CHEN. Inactivation of T_u Factor-Guanosine Triphosphate Recognition and Ribosome-binding Ability by Terminal Oxidation-Reduction of Yeast Phenylalanine Transfer Ribonucleic Acid 2049
CARRAWAY, KERMIT L., AND BAK C. SHIN. Specific Modification, Isolation, and Partial Characterization of an Erythrocyte Membrane Protein 2102
EPAND, RICHARD M. Conformational Properties of Cyanogen Bromide-cleaved Glucagon 2132
SEON, BYEONG-KUK, OLIVER A. ROHOLT, AND DAVID PRESSMAN. Differences in the Enzymatic Digestibility of the Variable and Constant Halves of Bence-Jones Protein with Temperature 2151
HICKMAN, SCOT, ROSALIND KORNFELD, C. KIRK OSTERLAND, AND STUART KORNFELD. The Structure of the Glycopeptides of a Human γM Immunoglobin 2156
ZULL, JAMES E., AND DENIS W. REPKE. Studies with Tritiated Polypeptide Hormones. I. The Preparation and Properties of an Active, Highly Tritiated Derivative of Parathyroid Hormone: Acetamidino-Parathyroid Hormone 2183
REPKE, DENIS W., AND JAMES E. ZULL. Studies with Tritiated Polypeptide Hormones. II. Biological and Chemical Properties of Tritiated Acetamidino-Insulin 2189
ZULL, JAMES E., AND DENIS W. REPKE. The Tissue Localization of Tritiated Parathyroid Hormone in Thyroparathyroidectomized Rats 2195
LIN, SHIN, AND IRVING ZABIN. β-Galactosidase. Rates of Synthesis and Degradation of Incomplete Chains .. 2205
VILLAREJO, MERNA, PATRICE J. ZAMENHOF, AND IRVING ZABIN. β-Galactosidase. *In Vivo* α-Complementation 2212

CHEMISTRY AND METABOLISM OF SUBSTANCES OF LOW MOLECULAR WEIGHT

ANTHONY, ROBERT S., AND LEONARD B. SPECTOR. Phos-

phorylated Acetate Kinase. Its Isolation and Reactivity ... 2120

CHANEY, STEVEN G., JOHN J. DUFFY, AND PAUL D. BOYER. Patterns of Oxygen Interchange Between Water, Substrates, and Phosphate Compounds of *Escherichia coli* and *Bacillus subtilis* ... 2145

DAHMS, A. STEPHEN, AND RICHARD L. ANDERSON. D-Fucose Metabolism in a Pseudomonad. I. Oxidation of D-Fucose to D-Fucono-δ-lactone by a D-Aldohexose Dehydrogenase ... 2222

DAHMS, A. STEPHEN, AND RICHARD L. ANDERSON. D-Fucose Metabolism in a Pseudomonad. II. Oxidation of D-Fucose to D-Fucono-γ-lactone by an L-*arabino*-Aldose Dehydrogenase and Hydrolysis of the Lactone by a Lactonase ... 2228

DAHMS, A. STEPHEN, AND RICHARD L. ANDERSON. D-Fucose Metabolism in a Pseudomonad. III. Conversion of D-Fuconate to 2-Keto-3-deoxy-D-fuconate by a Dehydratase ... 2233

DAHMS, A. STEPHEN, AND RICHARD L. ANDERSON. D-Fucose Metabolism in a Pseudomonad. IV. Cleavage of 2-Keto-3-deoxy-D-fuconate to Pyruvate and D-Lactaldehyde by 2-Keto-3-deoxy-L-arabonate Aldolase ... 2238

OXIDATION-REDUCTION AND BIOENERGETICS

RAETZ, CHRISTIAN R. H., AND EUGENE P. KENNEDY. The Association of Phosphatidylserine Synthetase with Ribosomes in Extracts of *Escherichia coli* ... 2008

UEDA, TETSUFUMI, EGLIS T. LODE, AND MINOR J. COON. Enzymatic ω-Oxidation. VI. Isolation of Homogeneous Reduced Diphosphopyridine Nucleotide-Rubredoxin Reductase ... 2109

KANDA, MASAYUKI, AND K. V. RAJAGOPALAN. Nonequivalence of the Flavin Adenine Dinucleotide Moieties of Chicken Liver Xanthine Dehydrogenase. 2177

ENZYMOLOGY

CURTHOYS, NORMAN P., JOHN M. SCOTT, AND JESSE C. RABINOWITZ. Folate Coenzymes of *Clostridium acidi-urici*. The Isolation of (*l*)-5,10-Methenyltetrahydropteroyltriglutamate, Its Conversion to (*l*)-Tetrahydropteroyltriglutamate and (*l*)-10-[^{14}C]Formyltetrahydropteroyltriglutamate, and the Synthesis of (*l*)-10-Formyl-[6,7-$^{3}H_2$]Tetrahydropteroyltriglutamate and (*l*)-[6,7-$^{3}H_2$]Tetrahydropteroyltriglutamate ... 1959

CURTHOYS, NORMAN P., AND JESSE C. RABINOWITZ. Formyltetrahydrofolate Synthetase. Binding of Folate Substrates and Kinetics of the Reverse Reaction ... 1965

HENDERSON, J. FRANK, AIKO MIKOSHIBA, SAMUEL Y. CHU, AND IAN C. CALDWELL. Kinetic Studies of Adenosine Kinase from Ehrlich Ascites Tumor Cells. 1972

SANDERS, HILDAGARDE K., GEORGE E. BECKER, AND ALVIN NASON. Glycine-Cytochrome *c* Reductase from *Nitrobacter agilis* ... 2015

SCHRAY, KEITH J., AND ALBERT S. MILDVAN. Kinetic and Magnetic Resonance Studies of the Mechanism of D-Xylose Isomerase. I. Binary and Ternary Complexes with Manganese(II), Substrates, and Inhibitors ... 2034

GOLDBERG, ERWIN. Amino Acid Composition and Properties of Crystalline Lactate Dehydrogenase X from Mouse Testes ... 2044

BUTTLAIRE, DANIEL H., ROBERT T. HERSH, AND RICHARD H. HIMES. Hydrogen Ion-induced Reversible Inactivation and Dissociation of Formyltetrahydrofolate Synthetase ... 2059

SAPOLSKY, ASHER I., AND J. FREDERICK WOESSNER, JR. Multiple Forms of Cathepsin D from Bovine Uterus 2069

BURLEIGH, BRUCE D., JR., AND CHARLES H. WILLIAMS, JR. The Isolation and Primary Structure of a Peptide Containing the Oxidation-Reduction Active Cysteine of *Escherichia coli* Lipoamide Dehydrogenase .. 2077

RONCHI, SEVERINO, AND CHARLES H. WILLIAMS, JR. The Isolation and Primary Structure of a Peptide Containing the Oxidation-Reduction Active Cystine of *Escherichia coli* Thioredoxin Reductase ... 2083

HALFORD, STEPHEN E., DAVID A. LENNETTE, PHILIP M. KELLEY, AND MILTON J. SCHLESINGER. A Mutationally Altered Alkaline Phosphatase from *Escherichia coli*. I. Formation of an Active Enzyme *in Vitro* and Phenotypic Suppression *in Vivo* ... 2087

HALFORD, STEPHEN E., DAVID A. LENNETTE, AND MILTON J. SCHLESINGER. A Mutationally Altered Alkaline Phosphatase from *Escherichia coli*. II. Structural and Catalytic Properties of the Activated Enzyme ... 2095

HASHITANI, YOSHITO, AND JACK R. COOPER. The Partial Purification of Thiamine Triphosphatase from Rat Brain ... 2117

FOX, IRVING H., AND WILLIAM N. KELLEY. Human Phosphoribosylpyrophosphate Synthetase. Kinetic Mechanism and End Product Inhibition ... 2126

GOLDIN, BARRY R., AND CARL FRIEDEN. The Effect of Pyridoxal Phosphate Modification on the Catalytic and Regulatory Properties of Bovine Liver Glutamate Dehydrogenase ... 2139

BOWES, GEORGE, AND WILLIAM L. OGREN. Oxygen Inhibition and Other Properties of Soybean Ribulose 1,5-Diphosphate Carboxylase ... 2171

WITHEILER, JORDANA, AND DAVID B. WILSON. The Purification and Characterization of a Novel Peptidase from Sheep Red Cells ... 2217

CONTROL MECHANISMS AND BIOCHEMICAL GENETICS

CUATRECASAS, PEDRO. Properties of the Insulin Receptor Isolated from Liver and Fat Cell Membranes 1980

MARZLUFF, WILLIAM F., JR., LEE A. SANDERS, DONALD M. MILLER, AND KENNETH S. MCCARTY. Two Chemically and Metabolically Distinct Forms of Calf Thymus Histone F3 ... 2026

BIRNBAUMER, LUTZ, STEPHEN L. POHL, MARTIN RODBELL, AND FINN SUNDBY. The Glucagon-sensitive Adenylate Cyclase System in Plasma Membranes of Rat Liver. VII. Hormonal Stimulation: Reversibility and Dependence on Concentration of Free Hormone 2038

KRESSE, HANS, AND ELIZABETH F. NEUFELD. The Sanfilippo A Corrective Factor. Purification and Mode of Action ... 2164

ANDO, TOSHIYUKI, KARSTEN RASMUSSEN, JOHN M. WRIGHT, AND WILLIAM L. NYHAN. Isolation and Identification of Methylcitrate, a Major Metabolic Product of Propionate in Patients with Propionic Acidemia ... 2200

COMMUNICATIONS

OZOLS, JURIS. Cytochrome b_5 from a Normal Human Liver. Isolation and the Partial Amino Acid Sequence ... 2242

RAETZ, CHRISTIAN R. H., CARLOS B. HIRSCHBERG, WILLIAM DOWHAN, WILLIAM T. WICKNER, AND EUGENE P. KENNEDY. A Membrane-bound Pyrophosphatase in *Escherichia coli* Catalyzing the Hydrolysis of Cytidine Diphosphate-Diglyceride ... 2245

NAGATA, YOSHIHO, AND MAX M. BURGER. Wheat Germ Agglutinin. Isolation and Crystallization ... 2248

FISHER, DANIEL B., AND SEYMOUR KAUFMAN. The Stimulation of Rat Liver Phenylalanine Hydroxylase by Phospholipids ... 2250

KRISHNA, GOPAL, JAMES P. HARWOOD, ALFRED J. BARBER, AND GRAHAM A. JAMIESON. Requirement for Guanosine Triphosphate in the Prostaglandin Activation of Adenylate Cyclase of Platelet Membranes... 2253

April 25, 1972

CUMULATIVE AUTHOR INDEX. Numbers 1 through 8.... iii

CHEMISTRY AND METABOLISM OF MACROMOLECULES

KLEE, WERNER A., AND CLAUDE B. KLEE. The Interaction of α-Lactalbumin and the A Protein of Lactose Synthetase ... 2336

BUNN, H. FRANKLIN, AND GUIDO GUIDOTTI. Stabilizing Interactions in Hemoglobin ... 2345

ENGLANDER, S. WALTER, AND CATHERINE MAUEL. Hydrogen Exchange Studies of Respiratory Proteins. II. Detection of Discrete, Ligand-induced Changes in Hemoglobin ... 2387

SMITH, DON W., DOUGLAS M. BROWN, AND WILLIAM H. CARNES. Preparation and Properties of Salt-soluble Elastin 2427
BORJA, CONCORDIA R., ELLEN FANNING, I-YIH HUANG, AND MERLIN S. BERGDOLL. Purification and Some Physicochemical Properties of Staphylococcal Enterotoxin E 2456
PAGE, ROBERT L., AND JOHN S. ANDERSON. Biosynthesis of the Polysaccharide of *Micrococcus lysodeikticus* Cell Walls. I. Characterization of an *in Vitro* System for Polysaccharide Biosynthesis 2471
TAN, ANNA L., ALICE DE YOUNG, AND ROBERT W. NOBLE. The pH Dependence of the Affinity, Kinetics, and Cooperativity of Ligand Binding to Carp Hemoglobin, *Cyprinus carpio* 2493
SCHMER, GOTTFRIED, EDWARD P. KIRBY, DAVID C. TELLER, AND EARL W. DAVIE. The Isolation and Characterization of Bovine Factor VIII (Antihemophilic Factor) 2512
MUTO, YASUTOSHI, AND DE WITT S. GOODMAN. Vitamin A Transport in Rat Plasma. Isolation and Characterization of Retinol-binding Protein 2533
MUTO, YASUTOSHI, JOHN EDGAR SMITH, PETER O. MILCH, AND DE WITT S. GOODMAN. Regulation of Retinol-binding Protein Metabolism by Vitamin A Status in the Rat 2542
CHEN, KIRK C. S., AND JORDAN TANG. Amino Acid Sequence around the Epoxide-reactive Residues in Pepsin 2566
HARTSUCK, JEAN A., AND JORDAN TANG. The Carboxylate Ion in the Active Center of Pepsin 2575
BROMER, WILLIAM W., MELINDA E. BOUCHER, JEFFERSON M. PATTERSON, ALLEN H. PEKAR, AND BRUCE H. FRANK. Glucagon Structure and Function. I. Purification and Properties of Bovine Glucagon and Monodesamidoglucagon 2581
SEAL, SAMARENDRA N., J. DEREK BEWLEY, AND ABRAHAM MARCUS. Protein Chain Initiation in Wheat Embryo. Resolution and Function of the Soluble Factors 2592
LUX, SAMUEL E., RONALD HIRZ, RICHARD I. SHRAGER, AND ANTONIO M. GOTTO. The Influence of Lipid on the Conformation of Human Plasma High Density Apolipoproteins 2598
IVERIUS, PER-HENRIK. The Interaction between Human Plasma Lipoproteins and Connective Tissue Glycosaminoglycans 2607
MÜLLER, ERIKA, ALVAH HINCKLEY, AND LAWRENCE ROTHFIELD. Studies of Phospholipid-requiring Bacterial Enzymes. III. Purification and Properties of Uridine Diphosphate Glucose: Lipopolysaccharide Glucosyltransferase I 2614
HINCKLEY, ALVAH, ERIKA MÜLLER, AND LAWRENCE ROTHFIELD. Reassembly of a Membrane-bound Multienzyme System. I. Formation of a Particle Containing Phosphatidylethanolamine, Lipopolysaccharide, and Two Glycosyltransferase Enzymes 2623

CHEMISTRY AND METABOLISM OF SUBSTANCES OF LOW MOLECULAR WEIGHT

GODWIN, HERMAN A., IRWIN H. ROSENBERG, CATHERINE R. FERENZ, PAULA M. JACOBS, AND JOHANNES MEIENHOFER. The Synthesis of Biologically Active Pteroyloligo-γ-L-glutamates (Folic Acid Conjugates). Evaluation of [^{3}H]Pteroylheptaglutamate for Metabolic Studies 2266
FAN, CHING LIANG, DARREL L. MILLER, AND VICTOR W. RODWELL. Metabolism of Basic Amino Acids in *Pseudomonas putida*. Transport of Lysine, Ornithine, and Arginine 2283
HAUSSLER, MARK R., AND HOWARD RASMUSSEN. The Metabolism of Vitamin D_3 in the Chick 2328
ZILG, HARALD, BRIAN A. TAPPER, AND ERIC E. CONN. The Origin of the Glucosidic Linkage Oxygen of the Cyanogenic Glucosides, Linamarin and Lotaustralin. 2384
HOCHSTADT-OZER, JOY. The Regulation of Purine Utilization in Bacteria. IV. Roles of Membrane-localized and Pericytoplasmic Enzymes in the Mechanism of Purine Nucleoside Transport across Isolated *Escherichia coli* Membranes 2419
ANDERSON, JOHN S., ROBERT L. PAGE, AND WILMAR L. SALO. Biosynthesis of the Polysaccharide of *Micrococcus lysodeikticus* Cell Walls. II. Identification of Uridine Diphospho-*N*-acetyl-D-mannosaminuronic Acid as a Required Substrate 2480
TRUMPOWER, BERNARD L., ANANT S. AIYAR, CLYDE E. OPLIGER, AND ROBERT E. OLSON. Studies on Ubiquinone. The Isolation and Identification of 5-Demethoxyubiquinone-9 as an Intermediate in Biosynthesis of Ubiquinone-9 in the Rat 2499

OXIDATION-REDUCTION AND BIOENERGETICS

FESSENDEN-RADEN, JUNE M. Purification and Properties of a New Coupling Factor Required for Oxidative Phosphorylation in Silicotungstate-treated Submitochondrial Particles 2351
WHITE-STEVENS, RODRIC H., AND HENRY KAMIN. Studies of a Flavoprotein, Salicylate Hydroxylase. I. Preparation, Properties, and the Uncoupling of Oxygen Reduction from Hydroxylation 2358
WHITE-STEVENS, RODRIC H., HENRY KAMIN, AND QUENTIN H. GIBSON. Studies of a Flavoprotein, Salicylate Hydroxylase. II. Enzyme Mechanism 2371
KONINGS, WILHELMUS N., AND ERNST FREESE. Amino Acid Transport in Membrane Vesicles of *Bacillus subtilis* 2408
YONETANI, T., H. YAMAMOTO, J. E. ERMAN, J. S. LEIGH, JR., AND G. H. REED. Electromagnetic Properties of Hemoproteins. V. Optical and Electron Paramagnetic Resonance Characteristics of Nitric Oxide Derivatives of Metalloporphyrin-Apohemoprotein Complexes 2447

ENZYMOLOGY

POSNER, ISRAEL, AND ALFREDO MORALES. Mechanisms of Enzyme and Substrate Activation by Lipoprotein Lipase Cofactors. I. A Specific Requirement of Physiological Concentrations of Calcium for Enzyme Activity 2255
TIEMEIER, DAVID C., AND GREGORY MILMAN. Chinese Hamster Liver Glutamine Synthetase. Purification, Physical and Biochemical Properties 2272
ASAKURA, TOSHIO, AND TAKASHI YONETANI. Studies on Cytochrome *c* Peroxidase. XVIII. Recombination of Apoenzyme with Protoporphyrin and Protoheme Monomethyl Esters 2278
CUMAR, FREDERICO A., JOHN F. TALLMAN, AND ROSCOE O. BRADY. The Biosynthesis of a Disialylganglioside by Galactosyltransferase from Rat Brain Tissue 2322
BROOKS, ROBERT L., JOSEPH D. SHORE, AND H. GUTFREUND. The Effects of pH and Temperature on Hydrogen Transfer in the Liver Alcohol Dehydrogenase Mechanism 2382
MILLARD, SARA A. Ribonucleotide Reductase in Developing Brain 2395
VON DIPPE, PATRICIA J., ANNIE ABRAHAM, CHARLES A. NELSON, AND W. GRADY SMITH. Kinetic and Molecular Properties of Lysine-sensitive Aspartokinase. Quaternary Structure, Catalytic Activity, and Feedback Control 2433
SHRAWDER, ELSIE, AND MARINO MARTINEZ-CARRION. Evidence of Phenylalanine Transaminase Activity in the Isoenzymes of Aspartate Transaminase 2486
CYSYK, RICHARD, AND WILLIAM H. PRUSOFF. Alteration of Ultraviolet Sensitivity of Thymidine Kinase by Allosteric Regulators, Normal Substrates, and a Photo-Affinity Label, 5-Iodo-2′ deoxyuridine, a Metabolic Analog of Thymidine 2522
ARION, WILLIAM J., PAMELIA W. CARLSON, BRUCE K. WALLIN, AND ALEX J. LANGE. Modifications of Hydrolytic and Synthetic Activities of Liver Microsomal Glucose 6-Phosphatase 2551
ARION, WILLIAM J., BRUCE K. WALLIN, PAMELIA W. CARLSON, AND ALEX J. LANGE. The Specificity of Glucose 6-Phosphatase of Intact Liver Microsomes . 2558

CONTROL MECHANISMS AND BIOCHEMICAL GENETICS

GALLANT, JONATHAN, AND GARY MARGASON. Amino Acid Control of Messenger Ribonucleic Acid Synthesis in *Bacillus subtilis* 2289
POHL, STEPHEN L., H. MICHIEL J. KRANS, LUTZ BIRNBAUMER, AND MARTIN RODBELL. Inactivation of Glucagon by Plasma Membranes of Rat Liver 2295
DE LORENZO, FRANCESCO, DANIEL S. STRAUS, AND BRUCE N. AMES. Histidine Regulation in *Salmonella typhimurium*. IX. Kinetic Studies of Mutant Histidyl Transfer Ribonucleic Acid Synthetases 2302
ADAIR, LINDA B., AND MARY ELLEN JONES. Purification and Characteristics of Aspartate Transcarbamylase from *Pseudomonas fluorescens* 2308
PALACIOS, RAFAEL, RICHARD D. PALMITER, AND ROBERT T. SCHIMKE. Identification and Isolation of Oval-

bumin-synthesizing Polysomes. I. Specific Binding of ^{125}I-Anti-Ovalbumin to Polysomes 2316
SCHRADER, WILLIAM T., DAVID O. TOFT, AND BERT W. O'MALLEY. Progesterone-binding Protein of Chick Oviduct. VI. Interaction of Purified Progesterone-receptor Components with Nuclear Constituents 2401
WERB, ZENA, AND ZANVIL A. COHN. Plasma Membrane Synthesis in the Macrophage following Phagocytosis of Polystyrene Latex Particles 2439
CUNNINGHAM, DENNIS D. Changes in Phospholipid Turnover following Growth of 3T3 Mouse Cells to Confluency 2464
SIREVÅG, REIDUN, AND ROBERT PAUL LEVINE. Fatty Acid Synthetase from *Chlamydomonas reinhardi*. Sites of Transcription and Translation 2586

COMMUNICATION

TARENTINO, ANTHONY L., THOMAS H. PLUMMER, JR., AND FRANK MALEY. A Re-evaluation of the Oligosaccharide Sequence Associated with Ovalbumin 2629

May 10, 1972

IUPAC COMMISSION ON THE NOMENCLATURE OF ORGANIC CHEMISTRY AND IUPAC-IUB COMMISSION ON BIOCHEMICAL NOMENCLATURE. Tentative Rules for the Nomenclature of Carotenoids 2633

CHEMISTRY AND METABOLISM OF MACROMOLECULES

DUBIN, DONALD T. Mitochondrial Ribonucleic Acid from Cultured Animal Cells. Comparison of Pulse-labeled with Steady State-labeled Ribonucleic Acid .. 2662
MILLER, LOIS, K., AND ROBERT D. WELLS. Properties of the Exonucleolytic Activities of the *Micrococcus luteus* Deoxyribonucleic Acid Polymerase 2667
MILLER, LOIS K., AND ROBERT D. WELLS. Deoxyribonucleoside Triphosphate Stimulation of Exonucleolytic Activity of the *Micrococcus luteus* Deoxyribonucleic Acid Polymerase 2675
VAN BAELEN, HUGO, MIA BECK, AND PIETER DE MOOR. A Cortisol-induced Charge Difference in Desialylated Human Transcortin Detected by Isoelectric Focusing 2699
HUANG, WEI-YONG, AND JORDAN TANG. Modification of an Arginyl Residue in Pepsin by 2,3-Butanedione. 2704
BAENZIGER, NANCY LEWIS, G. N. BRODIE, AND PHILIP W. MAJERUS. Isolation and Properties of a Thrombin-sensitive Protein of Human Platelets 2723
FRAKER, PAMELA J., AND SAMUEL KAPLAN. Isolation and Characterization of a Bacteriochlorophyll-containing Protein from *Rhodopseudomonas spheroides* 2732
YARUS, MICHAEL. Accessibility of Isoleucyl Transfer Ribonucleic Acid to Solvent during Recognition by Isoleucyl Transfer Ribonucleic Acid Synthetase 2738
BULL, RONALD K., SIDNEY JEVONS, AND PETER G. BARTON. Complexes of Prothrombin with Calcium Ions and Phospholipids 2747
STRITTMATTER, PHILIPP, RONALD E. BARRY, AND DORIS CORCORAN. Tryptic Conversion of Cytochrome b_5 Reductase to an Active Derivative Containing Two Peptide Chains 2768
MORTIMORE, GLENN E., KENNETH H. WOODSIDE, AND JAMES E. HENRY. Compartmentation of Free Valine and Its Relation to Protein Turnover in Perfused Rat Liver 2776
IMAMURA, TAKASHI, THOMAS O. BALDWIN, AND AUSTEN RIGGS. The Amino Acid Sequence of the Monomeric Hemoglobin Component from the Bloodworm, *Glycera dibranchiata* 2785
BORNSTEIN, PAUL, KLAUS VON DER MARK, ANNE W. WYKE, H. PAUL EHRLICH, AND JANET M. MONSON. Characterization of the Pro-α1 Chain of Procollagen. 2808
FRIEDMAN, EILEEN A., AND HAMILTON O. SMITH. An Adenosine Triphosphate-dependent Deoxyribonuclease from *Hemophilus influenzae* Rd. I. Purification and Properties of the Enzyme 2846
SMITH, HAMILTON O., AND EILEEN A. FRIEDMAN. An Adenosine Triphosphate-dependent Deoxyribonuclease from *Hemophilus influenzae* Rd. II. Adenosine Triphosphatase Properties 2854
FRIEDMAN, EILEEN A., AND HAMILTON O. SMITH. An Adenosine Triphosphate-dependent Deoxyribonuclease from *Hemophilus influenzae* Rd. III. Substrate Specificity 2859
BOTES, D. P. Snake Venom Toxins. The Amino Acid Sequences of Toxins b and d from *Naja melanoleuca* Venom 2866
SNEIDER, THOMAS W. Methylation of Mammalian Deoxyribonucleic Acid. III. Terminal *Versus* Internal Location of 5-Methylcytosine in Oligodeoxyribonucleotides from Novikoff Hepatoma Cell Deoxyribonucleic Acid 2872
DUBNOFF, JERRY S., AND UMADAS MAITRA. Characterization of the Ribosome-dependent Guanosine Triphosphatase Activity of Polypeptide Chain Initiation Factor IF 2 2876
DUBNOFF, JERRY S., ARTHUR H. LOCKWOOD, AND UMADAS MAITRA. Studies on the Role of Guanosine Triphosphate in Polypeptide Chain Initiation in *Escherichia coli* 2884
PRICE, PAUL A. Characterization of Ca^{++} and Mg^{++} Binding to Bovine Pancreatic Deoxyribonuclease A .. 2895
POULOS, THOMAS L., AND PAUL A. PRICE. Some Effects of Calcium Ions on the Structure of Bovine Pancreatic Deoxyribonuclease A 2900
PRAGER, ELLEN M., NORMAN ARNHEIM, GEORGE A. MROSS, AND ALLAN C. WILSON. Amino Acid Sequence Studies on Bobwhite Quail Egg White Lysozyme 2905
GROS, CLAUDE, GENEVIÈVE LEMAIRE, ROLAND VAN RAPENBUSCH, AND BERNARD LABOUESSE. The Subunit Structure of Tryptophanyl Transfer Ribonucleic Acid Synthetase from Beef Pancreas 2931

CHEMISTRY AND METABOLISM OF SUBSTANCES OF LOW MOLECULAR WEIGHT

CONNETT, RICHARD J., BENJAMIN WITTELS, AND JACOB J. BLUM. Metabolic Pathways in *Tetrahymena*. II. Compartmentalization of Acetyl Coenzyme A and Structure of the Glycolytic and Gluconeogenic Pathways 2657
CARTER, JAMES R., JR., JOSEPH AVRUCH, AND DONALD B. MARTIN. Glucose Transport in Plasma Membrane Vesicles from Rat Adipose Tissue 2682
VORHABEN, JEAN E., AND JAMES W. CAMPBELL. Glutamine Synthetase. A Mitochondrial Enzyme in Uricotelic Species 2763
HUGLI, TONY E., AND STANFORD MOORE. Determination of the Tryptophan Content of Proteins by Ion Exchange Chromatography of Alkaline Hydrolysates .. 2828

OXIDATION-REDUCTION AND BIOENERGETICS

BRAND, JERRY, TADEUSZ BASZYNSKI, FREDRICK L. CRANE, AND DAVID W. KROGMANN. Selective Inhibition of Photosynthetic Reactions by Polycations. 2814
HEATH, ROBERT L., AND GEOFFREY HIND. Bromocresol Purple and Ethyl Red as Indicators of Events Linked to Changes in the Energization of Chloroplast Membranes 2917

ENZYMOLOGY

WANG, CHIH-CHENG, AND OSCAR TOUSTER. Studies of Catalysis by β-Glucuronidase. Active Site 2644
WANG, CHIH-CHENG, AND OSCAR TOUSTER. Studies of Catalysis by β-Glucuronidase. The Effect of Structure on the Rate of Hydrolysis of Substituted Phenyl-β-D-glucopyranosiduronic Acids 2650
YUN, SHYUN-LONG, AND ROBERT YING HSU. Fatty Acid Synthetase of Chicken Liver. Reversible Dissociation into Two Nonidentical Subcomplexes of Similar Size 2689
MALDONADO, MARIA E., KYUNG-JA OH, AND PERRY A. FREY. Studies on *Escherichia coli* Pyruvate Dehydrogenase Complex. I. Effect of Bromopyruvate on the Catalytic Activities of the Complex 2711
SCHENGRUND, CARA-LYNNE, DORIS S. JENSEN, AND ABRAHAM ROSENBERG. Localization of Sialidase in the Plasma Membrane of Rat Liver Cells 2742

Transfer Ribonucleic Acid Synthesis in *Escherichia coli* B/r 2842
Severson, David L., George I. Drummond, and Prakash V. Sulakhe. Adenylate Cyclase in Skeletal Muscle. Kinetic Properties and Hormonal Stimulation 2949

COMMUNICATIONS

Pemrick, S. M., and F. G. Walz, Jr. Initial Rapid Proton Liberation during Hydrolysis of Adenosine Triphosphate by Myosin Subfragment One 2959
Eldred, Emmett W., and Paul R. Schimmel. Rapid Deacylation by Isoleucyl Transfer Ribonucleic Acid Synthetase of Isoleucine-specific Transfer Ribonucleic Acid Aminoacylated with Valine 2961
Kletzien, Rolf F., James F. Perdue, and Andria Springer. Cytochalasin A and B. Inhibition of Sugar Uptake in Cultured Cells 2964
Killick, Kathleen A., and Barbara E. Wright. Trehalose Synthesis during Differentiation in *Dictyostelium discoideum*. III. *In Vitro* Unmasking of Trehalose 6-Phosphate Synthetase 2967
Baxter, Robert C., Charles W. Carlson, and Burton M. Pogell. Stimulation of the Neutral Activity of Rabbit Liver Fructose 1,6-Diphosphatase by Fatty Acids 2969

CORRECTIONS

Stephani, Ralph A., and Alton Meister. Structure of the Dimeric α-Keto Acid Analogue of Asparagine. **Vol. 246 (1971), 7115–7118** 2972
Emura, Junji, Tokuji Ikenaka, John H. Collins, and Karl Schmid. The Constant and Variable Regions of the Carboxyl-terminal CNBr Fragment of α-Acid Glycoprotein. **Vol. 246 (1971), 7821–7823** 2972
Chung, Soo Il, and J. E. Folk. Kinetic Studies with Transglutaminases. The Human Blood Enzymes (Activated Coagulation Factor XIII) and the Guinea Pig Hair Follicle Enzyme 2798
Mavis, Richard D., Robert M. Bell, and P. Roy Vagelos. Effect of Phospholipase C Hydrolysis of Membrane Phospholipids on Membranous Enzymes .. 2835
Slor, Hanoch, and Tama Lev. Studies on the Neutral Deoxyribonuclease Activity in Highly Purified Acid Deoxyribonuclease 2926
Wykle, Robert L., Claude Piantadosi, and Fred Snyder. The Role of Acyldihydroxyacetone Phosphate, Reduced Nicotinamide Adenine Dinucleotide, and Reduced Nicotinamide Adenine Dinucleotide Phosphate in the Biosynthesis of *O*-Alkyl Glycerolipids by Microsomal Enzymes of Ehrlich Ascites Tumor 2944

CONTROL MECHANISMS AND BIOCHEMICAL GENETICS

Anderson, Wayne B., Robert L. Perlman, and Ira Pastan. Effect of Adenosine 3′,5′-Monophosphate Analogues on the Activity of the Cyclic Adenosine 3′,5′-Monophosphate Receptor in *Escherichia coli* 2717
Diesterhaft, Martin D., Hsiang-Chuan Hsieh, Charles Elson, H. James Sallach, and Earl Shrago. Enzymatic Regulation of the Metabolism of Phosphoenolpyruvate in *Tetrahymena pyriformis* .. 2755
Strand, L. James, Joan Manning, and Harvey S. Marver. The Induction of δ-Aminolevulinic Acid Synthetase in Cultured Liver Cells. The Effects of End Product and Inhibitors of Heme Synthesis 2820
Dennis, Patrick P. Regulation of Ribosomal and

May 25, 1972

CHEMISTRY AND METABOLISM OF MACROMOLECULES

Kuriyama, Yoshiaki. Studies on Microsomal Nucleoside Diphosphatase of Rat Hepatocytes. Its Purification, Intramembranous Localization, and Turnover 2979
Singer, Cliff E., and Gerald R. Smith. Histidine Regulation in *Salmonella typhimurium*. XIII. Nucleotide Sequence of Histidine Transfer Ribonucleic Acid 2989
Cooper, David, and E. Reich. Neurotoxin from Venom of the Cobra, *Naja naja siamensis*. Purification and Radioactive Labeling 3008
Morimoto, Keisuke, and William F. Harrington. Isolation and Physical Chemical Properties of an M-Line Protein from Skeletal Muscle 3052
Robbins, Frederick M., and Leo G. Holmes. Binding of *N*-Methyl Nicotinamide Chloride by Tryptophan Residues of α-Lactalbumin 3062
Huang, Wai Mun, and I. R. Lehman. On the Exonuclease Activity of Phage T4 Deoxyribonucleic Acid Polymerase 3139
Glushko, Victor, Peter J. Lawson, and Frank R. N. Gurd. Conformational States of Bovine Pancreatic Ribonuclease A Observed by Normal and Partially Relaxed Carbon 13 Nuclear Magnetic Resonance 3176
Baghurst, Peter A., Lawrence W. Nichol, and William H. Sawyer. The Effect of D_2O on the Association of β-Lactoglobulin A 3199
Ro-Choi, Tae Suk, Ramachandra Reddy, Dale Henning, Tatsuya Takano, Charles W. Taylor, and Harris Busch. Nucleotide Sequence of 4.5 S Ribonucleic Acid$_1$ of Novikoff Hepatoma Cell Nuclei. 3205
Grellert, Edward, and Clinton E. Ballou. Biosynthesis of a Mycobacterial Lipopolysaccharide. Evidence for an Acylpolysaccharide Methyltransferase 3236
Weiner, Alan M., Terry Platt, and Klaus Weber. Amino-terminal Sequence Analysis of Proteins Purified on a Nanomole Scale by Gel Electrophoresis 3242
Delcour, Jean, and John Papaconstantinou. Biochemistry of Bovine Lens Proteins. IV. Synthesis and Aggregation of α-Crystallin Subunits in Differentiating Lens Cells 3289
Gefter, Malcolm L., Ian J. Molineux, Thomas Kornberg, and H. G. Khorana. Deoxyribonucleic Acid Synthesis in Cell-free Extracts. III. Catalytic Properties of Deoxyribonucleic Acid Polymerase II 3321
Inagaki, Akira, and Harris Busch. Structural Analysis of Nucleolar Precursors of Ribosomal Ribonucleic Acids. Sequence Analysis of Long Oligonucleotides Produced by T_1 Ribonuclease Digestion of Nucleolar and Ribosomal 28 S Ribonucleic Acid of Novikoff Hepatoma Ascites Cells 3327
Prouty, Walter F., and Alfred L. Goldberg. Effects of Protease Inhibitors on Protein Breakdown in *Escherichia coli* 3341

CHEMISTRY AND METABOLISM OF SUBSTANCES OF LOW MOLECULAR WEIGHT

McCarty, Richard E., Phillip R. Pittman, and Yoko Tsuchiya. Light-dependent Inhibition of Photophosphorylation by *N*-Ethylmaleimide 3048
Maury, Peter. Increased Excretion of *N*-Acetylneuramin-(2 → 3)-lactose in the Urine of Pregnant and Lactating Rats 3153
Misra, Hara P., and Irwin Fridovich. The Role of Superoxide Anion in the Autoxidation of Epinephrine and a Simple Assay for Superoxide Dismutase 3170
Williamson, Denis G., Donald S. Layne, and Delwood C. Collins. Steroid Estrogen Glycosides. Formation of Glucosides and Galactosides by Human Liver and Kidney 3286
Cass, Carol E., and Alan R. P. Paterson. Mediated Transport of Nucleosides in Human Erythrocytes. Accelerative Exchange Diffusion of Uridine and Thymidine and Specificity toward Pyrimidine Nucleosides as Permeants 3314

OXIDATION-REDUCTION AND BIOENERGETICS

Lanyi, Janos K. Studies of the Electron Transport Chain of Extremely Halophilic Bacteria. VII. Solubilization Properties of Menadione Reductase 3001
Pedersen, Peter L., and William A. Coty. Energy-dependent Accumulation of Calcium and Phosphate by Purified Inner Membrane Vesicles of Rat Liver Mitochondria 3107

ENZYMOLOGY

VESSEY, DONALD A., AND DAVID ZAKIM. Regulation of Microsomal Enzymes by Phospholipids. V. Kinetic Studies of Hepatic Uridine Diphosphate-Glucuronyltransferase 3023

PATTABIRAMAN, T. N., AND WILLIAM B. LAWSON. Stereochemistry of the Active Site of α-Chymotrypsin. The Influence of Polar Groups in Locked Substrates 3029

REED, GEORGE H., HANNELORE DIEFENBACH, AND MILDRED COHN. Studies of Manganous Nucleotide Complexes with Uridine Diphosphate-Glucose Pyrophosphorylase, Formyltetrahydrofolate Synthetase, and Creatine Kinase. Mechanism of Water Proton Magnetic Relaxation from Frequency Dependence Measurements 3066

REED, GEORGE H., AND MILDRED COHN. Structural Changes Induced by Substrates and Anions at the Active Site of Creatine Kinase. Electron Paramagnetic Resonance and Nuclear Magnetic Relaxation Rate Studies of the Manganous Complexes 3073

LIN, CHI-WEI, AND WILLIAM H. FISHMAN. L-Homoarginine. An Organ-Specific, Uncompetitive Inhibitor of Human Liver and Bone Alkaline Phosphohydrolases 3082

ALBERS, R. WAYNE, AND GEORGE J. KOVAL. Sodium-Potassium-activated Adenosine Triphosphatase. VII. Concurrent Inhibition of Na^+-K^+-Adenosine Triphosphatase and Activation of K^+-Nitrophenylphosphatase Activities 3088

DEUPREE, JEAN D., AND WILLIS A. WOOD. L-Ribulose 5-Phosphate 4-Epimerase from *Aerobacter aerogenes*. Evidence for a Role of Divalent Metal Ions in the Epimerization Reaction 3093

SALO, WILMER L., DEXTER D. FOSSITT, RARDON D. BEVILL, III, SAMUEL KIRKWOOD, AND WILLIS A. WOOD. L-Ribulose 5-Phosphate 4-Epimerase from *Aerobacter aerogenes*. Kinetic Isotope Effect with Tritiated Substrate 3098

BONNER, WILLIAM M. AND KONRAD BLOCH. Purification Properties of Fatty Acyl Thioesterase I from *Escherichia coli* 3123

KATO, GABOR, ESTRELLA TAN, AND JAMES YUNG. Acetylcholinesterase. Kinetic Studies on the Mechanism of Atropine Inhibition 3186

ALBERTS, ALFRED W., ROBERT M. BELL, AND P. ROY VAGELOS. Acyl Carrier Protein. XV. Studies of β-Ketoacyl-Acyl Carrier Protein Synthetase 3190

MARECHAL, LUIS R., AND ENRIQUE BELOCOPITOW. Metabolism of Trehalose in *Euglena gracilis*. I. Partial Purification and Some Properties of Trehalose Phosphorylase 3223

BAIS, RENZE, AND BRUCE KEECH. The Magnesium Ion (Mg^{2+}) Activation of Sheep Kidney Pyruvate Carboxylase 3255

TAN, KIM H., AND REX LOVRIEN. Enzymology in Aqueous-Organic Cosolvent Binary Mixtures 3278

SCRUTTON, MICHAEL C., PAUL GRIMINGER, AND JOHN C. WALLACE. Pyruvate Carboxylase. Bound Metal Content of the Vertebrate Liver Enzyme as a Function of Diet and Species 3305

HOPPER, SARAH. Ribonucleotide Reductase of Rabbit Bone Marrow. I. Purification, Properties, and Separation into Two Protein Fractions 3336

SCHONBAUM, GREGORY R., AND SIU LO. Interaction of Peroxidases with Aromatic Peracids and Alkyl Peroxides. Product Analysis 3353

CONTROL MECHANISMS AND BIOCHEMICAL GENETICS

MACKIE, GEORGE, AND DAVID B. WILSON. Regulation of the *gal* Operon of *Escherichia coli* by the *capR* Gene ... 2973

SLAKEY, LINDA L., MARGARET C. CRAIG, ENRIQUE BEYTIA, ANITA BRIEDIS, DONALD H. FELDBRUEGGE, RICHARD E. DUGAN, ASAF A. QURESHI, CHALLA SUBBARAYAN, AND JOHN W. PORTER. The Effects of Fasting, Refeeding, and Time of Day on the Levels of Enzymes Effecting the Conversion of β-Hydroxy-β-methylglutaryl-coenzyme A to Squalene 3014

DEUEL, THOMAS F., AND DAVID C. QURNER. *Bacillus subtilis* Glutamine Synthetase. Dependence of γ-Glutamyltransferase Activity on Ionic Strength and Specific Monovalent Cations 3039

BULOVA, STEPHEN I., AND EDWARD R. BURKA. Template Activity for Globin and Non-Globin Protein Synthesis in Reticulocytes 3101

KUCZENSKI, RONALD T., AND ARNOLD J. MANDELL. Regulatory Properties of Soluble and Particulate Rat Brain Tyrosine Hydroxylase 3114

SCHIMMER, BERNARD P. Adenylate Cyclase Activity in Adrenocorticotropic Hormone-sensitive and Mutant Adrenocortical Tumor Cell Lines 3134

FORREST, GERALD L., AND ROBERT R. KLEVECZ. Synthesis and Degradation of Microtubule Protein in Synchronized Chinese Hamster Cells 3147

WILSON, SAMUEL H., BRUCE K. SCHRIER, JOHN L. FARBER, EDWARD J. THOMPSON, ROGER N. ROSENBERG, ARTHUR J. BLUME, AND MARSHALL W. NIRENBERG. Markers for Gene Expression in Cultured Cells from the Nervous System 3159

JOHNSON, MARGARET E. MAYO, NAOMI MAMOTA DAS, FRED R. BUTCHER, AND JOHN N. FAIN. The Regulation of Gluconeogenesis in Isolated Rat Liver Cells by Glucagon, Insulin, Dibutyryl Cyclic Adenosine Monophosphate, and Fatty Acids 3229

YEH, YUN-CHI, AND IRWIN TESSMAN. Control by Bacteriophage T4 of the Reduction of Adenosine Nucleotide to Deoxyadenosine Nucleotide 3252

KOPELOVICH, LEVY, LAWRENCE SWEETMAN, AND JEROME S. NISSELBAUM. Regulation of Aspartate Aminotransferase Isozymes by D-Erythrose 4-Phosphate and Glycolaldehyde Phosphate, the Naturally Occurring Homologues of D-Glyceraldehyde 3-Phosphate 3262

MAENO, HIROO, AND PAUL GREENGARD. Phosphoprotein Phosphatases from Rat Cerebral Cortex. Subcellular Distribution and Characterization 3269

PALMITER, RICHARD D., RAFAEL PALACIOS, AND ROBERT T. SCHIMKE. Identification and Isolation of Ovalbumin-synthesizing Polysomes. II. Quantification and Immunoprecipitation of Polysomes 3296

COMMUNICATIONS

HAWKINSON, STUART W., CHIN HSUAN WEI, FRED C. HARTMAN, I. LUCILLE NORTON, AND J. RALPH EINSTEIN. Triose Phosphate Isomerase from Bakers' Yeast. Preliminary Crystallographic Data 3361

TANIUCHI, HIROSHI, DAVID R. DAVIES, AND CHRISTIAN B. ANFINSEN. A Comparison of the X-ray Diffraction Patterns of Crystals of Reconstituted Nuclease-T and of Native Staphylococcal Nuclease 3362

NAKAZATO, HIROSHI, AND MARY EDMONDS. The Isolation and Purification of Rapidly Labeled Polysome-bound Ribonucleic Acid on Polythymidylate Cellulose 3365

June 10, 1972

CHEMISTRY AND METABOLISM OF MACROMOLECULES

SMITH, ROSS, JEFFREY R. DAWSON, AND CHARLES TANFORD. The Size and Number of Polypeptide Chains in Human Serum Low Density Lipoprotein ... 3376

HERSHFIELD, MICHAEL S., AND NANCY G. NOSSAL. Hydrolysis of Template and Newly Synthesized Deoxyribonucleic Acid by the 3′ to 5′ Exonuclease Activity of the T4 Deoxyribonucleic Acid Polymerase 3393

WELLS, ROBERT D., AND JACQUELYNN E. LARSON. Buoyant Density Studies on Natural and Synthetic Deoxyribonucleic Acids in Neutral and Alkaline Solutions 3405

MELVILLE, J. CURTIS, AND CLARENCE A. RYAN. Chymotrypsin Inhibitor I from Potatoes. Large Scale Preparation and Characterization of Its Subunit Components 3445

GRANT, MICHAEL E., NICHOLAS A. KEFALIDES, AND DARWIN J. PROCKOP. The Biosynthesis of Basement Membrane Collagen in Embryonic Chick Lens. I. Delay between the Synthesis of Polypeptide Chains and the Secretion of Collagen by Matrix-free Cells ... 3539

GRANT, MICHAEL E., NICHOLAS A. KEFALIDES, AND DARWIN J. PROCKOP. The Biosynthesis of Basement

Membrane Collagen in Embryonic Chick Lens. II. Synthesis of a Precursor Form by Matrix-free Cells and a Time-dependent Conversion to α Chains in Intact Lens 3545
JOHNSON, GERALD G., AND E. PETER GEIDUSCHEK. Purification of the Bacteriophage SP01 Transcription Factor 1 3571
SUGANO, NOBUHIKO, MARK O. J. OLSON, LYNN C. YEOMAN, BARRY R. JOHNSON, CHARLES W. TAYLOR, WESLEY C. STARBUCK, AND HARRIS BUSCH. Amino Acid Sequence of the COOH-terminal Portion of the Arginine-Lysine-rich Histone of Calf Thymus 3589
MIDELFORT, CHRISTIAN F., AND ALAN H. MEHLER. A Chymotrypsin-catalyzed Modification of Rabbit Muscle Aldolase 3618
BARTLEY, JAMES A., AND ROGER CHALKLEY. The Binding of Deoxyribonucleic Acid and Histone in Native Nucleohistone 3647
HELENIUS, ARI, AND KAI SIMONS. The Binding of Detergents to Lipophilic and Hydrophilic Proteins 3656
OLSON, JOHN S., AND QUENTIN H. GIBSON. The Functional Properties of Hemoglobin Bethesda ($\alpha_2\beta_2^{144\ His}$) 3662
LI, Y.-T., AND Y. C. LEE. Pineapple α- and β-D-Mannopyranosidases and Their Action on Core Glycopeptides 3677

CHEMISTRY AND METABOLISM OF SUBSTANCES OF LOW MOLECULAR WEIGHT

PALMER, RICHARD E., AND RICHARD L. ANDERSON. Cellobiose Metabolism in *Aerobacter aerogenes*. II. Phosphorylation of Cellobiose with Adenosine 5′-Triphosphate by a β-Glucoside Kinase 3415
PALMER, RICHARD E., AND RICHARD L. ANDERSON. Cellobiose Metabolism in *Aerobacter aerogenes*. III. Cleavage of Cellobiose Monophosphate by a Phospho-β-glucosidase 3420
POLITO, ALAN, G. POPJÁK, AND THOMAS PARKER. Artificial Substrates in Squalene and Sterol Biosynthesis 3464
RAMSEY, ROBERT B., RAYMOND T. AEXEL, JOHN P. JONES, AND HAROLD J. NICHOLAS. Formation of Methyl Sterols in Brain Cholesterol Biosynthesis. Sterol Formation *in Vitro* in Actively Myelinating Rat Brain 3471
SHERRY, A. DEAN, EDWARD R. BIRNBAUM, AND DENNIS W. DARNALL. A Nuclear Magnetic Resonance Study of Histidine-Neodymium (III) Complexes 3489
HAMBERG, MATS, AND BENGT SAMUELSSON. On the Metabolism of Prostaglandins E_1 and E_2 in the Guinea Pig 3495
YOUNG, VERNON R., SUNNEY D. ALEXIS, B. SUREN BALIGA, HAMISH N. MUNRO, AND WOLFGANG MUECKE. Metabolism of Administered 3-Methylhistidine. Lack of Muscle Transfer Ribonucleic Acid Charging and Quantitative Excretion as 3-Methylhistidine and Its *N*-Acetyl-Derivative 3592

OXIDATION-REDUCTION AND BIOENERGETICS

YAMAMOTO, SHOZO, TERUKO NAKAZAWA, AND OSAMU HAYAISHI. Studies on Monooxygenases. IV. Anaerobic Formation of an α-Keto Acid by L-Lysine Monooxygenase 3434
NAKAZAWA, TERUKO, KAZUKO HORI, AND OSAMU HAYAISHI Studies on Monooxygenases. V. Manifestation of Amino Acid Oxidase Activity by L-Lysine Monooxygenase 3439
LIEN, STEPHEN, RICHARD BERZBORN, AND EFRAIM RACKER. Partial Resolution of the Enzymes Catalyzing Photophosphorylation. IX. Studies on the Subunit Structure of Coupling Factor 1 from Chloroplasts 3520
SCHACTER, BRENT A., EDWARD B. NELSON, HARVEY S. MARVER, AND BETTIE SUE SILER MASTERS. Immunochemical Evidence for an Association of Heme Oxygenase with the Microsomal Electron Transport System 3601

ENZYMOLOGY

CAGEN, LAUREN M., AND HERBERT C. FRIEDMANN. Enzymatic Phosphorylation of Serine 3382
MISRA, HARA P., AND IRWIN FRIDOVICH. The Purification and Properties of Superoxide Dismutase from *Neurospora crassa* 3410
SWEET, FREDERICK, FERNANDO ARIAS, AND JAMES C. WARREN. Affinity Labeling of Steroid Binding Sites. Synthesis of 16α-Bromoacetoxyprogesterone and Its Use for Affinity Labeling of 20β-Hydroxysteroid Dehydrogenase 3424
VILLAFRANCA, JOSEPH J., AND ALBERT S. MILDVAN. The Mechanism of Aconitase Action. III. Detection and Properties of Enzyme-Metal-Substrate and Enzyme-Metal-Inhibitor Bridge Complexes with Manganese (II) and Iron(II) 3454
EHRENBERG, ANDERS, AND PETER REICHARD. Electron Spin Resonance of the Iron-containing Protein B2 from Ribonucleotide Reductase 3485
STOOLMILLER, ALLEN C., ALLEN L. HORWITZ, AND ALBERT DORFMAN. Biosynthesis of the Chondroitin Sulfate Proteoglycan. Purification and Properties of Xylosyltransferase 3525
SEIDL, DINAH S., AND IRVIN E. LIENER. Isolation and Properties of Complexes of the Bowman-Birk Soybean Inhibitor with Trypsin and Chymotrypsin 3533
DE LUMEN, BENITO O., AND AL L. TAPPEL. α-*N*-Benzoylarginine-β-naphthylamide Amidohydrolase of Rat Liver Lysosomes 3552
KOPP, LOWELL E., AND RALPH P. MIECH. Nonlinear Enzymatic Cycling Systems: the Exponential Cycling System. II. Experimental Cycling System 3564
SIEGEL, GEORGE J., AND BEVERLY GOODWIN. Sodium-Potassium-activated Adenosine Triphosphatase: Potassium Regulation of Enzyme Phosphorylation. Sodium-stimulated, Potassium-inhibited Uridine Triphosphate Hydrolysis 3630
HUANG, CHARLES Y., AND CARL FRIEDEN. The Mechanism of Ligand-induced Structural Changes in Glutamate Dehydrogenase. Studies of the Rate of Depolymerization and Isomerization Effected by Coenzymes and Guanine Nucleotides 3638
ROGERS, KENNETH S., AND STANLEY C. YUSKO. Molecular Interactions of Uncompetitive Inhibitors with Bovine Liver Glutamate Dehydrogenase. Sodium Alkyl Sulfates 3671

CONTROL MECHANISMS AND BIOCHEMICAL GENETICS

GHOSH, KAKOLI, AND HARA PRASAD GHOSH. Role of Modified Nucleosides in Transfer Ribonucleic Acid. Effect of Removal of the Modified Base Adjacent to 3′ End of the Anticodon in Codon-Anticodon Interaction 3369
CHUANG, RONALD Y., AND ROY H. DOI. Characterization of Lysine Transfer Ribonucleic Acid from Vegetative Cells and Spores of *Bacillus subtilis* 3476
FULCO, ARMAND J. The Biosynthesis of Unsaturated Fatty Acids by Bacilli. III. Uptake and Utilization of Exogenous Palmitate 3503
FULCO, ARMAND J. The Biosynthesis of Unsaturated Fatty Acids by Bacilli. IV. Temperature-mediated Control Mechanisms 3511
KOPP, LOWELL E., AND RALPH P. MIECH. Nonlinear Enzymatic Cycling Systems: the Exponential Cycling System. I. Mathematical Models 3558
EXTON, JOHN H., NAOMI FRIEDMANN, ELLEN HEE-AIK WONG, J. PARKE BRINEAUX, JACKIE D. CORBIN, AND CHARLES R. PARK. Interaction of Glucocorticoids with Glucagon and Epinephrine in the Control of Gluconeogenesis and Glycogenolysis in Liver and of Lipolysis in Adipose Tissue 3579
MONDER, CARL, AND ALENA COUFALIK. Influence of Cortisol on Glycogen Synthesis and Gluconeogenesis in Fetal Rat Liver in Organ Culture 3608
LODISH, HARVEY F., AND MARION JACOBSEN. Regulation of Hemoglobin Synthesis. Equal Rates of Translation and Termination of α- and β-Globin Chains 3622
WIXOM, ROBERT L., M. KUMUDAVALLI REDDY, AND PHILIP P. COHEN. A Concerted Response of the Enzymes of Urea Biosynthesis during Thyroxine-induced Metamorphosis of *Rana catesbeiana* 3684

COMMUNICATIONS

ASAKURA, TOSHIO, MAMORU TAMURA, AND MASATERU SHIN. Enzymatic Reduction of Spin-labeled Ferrihemoglobin 3693
ENGELMAN, DONALD M., AND JAMES E. ROTHMAN. The Planar Organization of Lecithin-Cholesterol Bilayers. 3694
HINZ, HANS-JÜRGEN, AND JULIAN M. STURTEVANT. Calorimetric Investigation of the Influence of Choles-

terol on the Transition Properties of Bilayers Formed from Synthetic L-α-Lecithins in Aqueous Suspension 3697

RAJU, PULLARKAT KRISHNAN, AND RAYMOND REISER. Inhibition of Stearoyl Coenzyme A Desaturase by Sterculate in Mouse Liver Microsomes 3700

June 25, 1972

CUMULATIVE AUTHOR INDEX. NUMBERS 1 THROUGH 12 iii

CHEMISTRY AND METABOLISM OF MACROMOLECULES

KATZMAN, RICHARD L. Isolation of *N*-Acetyllactosamine and Galactosyl-β-D-(1→4)-*N*-acetyllactosamine from Beef Brain Glycopeptides 3744

KONISKY, JORDAN. Characterization of Colicin Ia and Colicin Ib. Chemical Studies of Protein Structure 3750

LIN, KUANG-TZU D., AND HAROLD F. DEUTSCH. Human Carbonic Anhydrases. VIII. Isolation and Characterization of a Polymorphic Form of a C Type Isozyme 3761

ALPERT, ELLIOT, JAMES W. DRYSDALE, KURT J. ISSELBACHER, AND PETER H. SCHUR. Human α-Fetoprotein. Isolation, Characterization, and Demonstration of Microheterogeneity 3792

SALHANY, J. MITCHELL. Effect of Carbon Dioxide on Human Hemoglobin. Kinetic Basis for the Reduced Oxygen Affinity 3799

HANSEN, BENT S., MAURICE H. VAUGHAN, AND LI-JEN WANG. Reversible Inhibition by Histidinol of Protein Synthesis in Human Cells at the Activation of Histidine 3854

GODDARD, JOHN P., AND LADONNE H. SCHULMAN. Conversion of Exposed Cytidine Residues to Uridine Residues in *Escherichia coli* Formylmethionine Transfer Ribonucleic Acid 3864

CANDIDO, E. PETER M., AND GORDON H. DIXON. Acetylation of Trout Testis Histones *in Vivo*. Site of the Modification in Histone IIb_1 3868

YAMASAKI, NOBUYUKI, KENJI KANGAWA, SHIGERU KOBAYASHI, MOTOSUKE KIKUTANI, AND MARTIN SONENBERG. Amino Acid Sequence of a Biologically Active Fragment of Bovine Growth Hormone 3874

RYMO, LARS, LARS LUNDVIK, AND ULF LAGERKVIST. Subunit Structure and Binding Properties of Three Amino Acid Transfer Ribonucleic Acid Ligases 3888

LAGERKVIST, ULF, LARS RYMO, OLIVER LINDQVIST, AND ERLAND ANDERSSON. Appendix. Some Properties of Crystals of Lysine Transfer Ribonucleic Acid Ligase from Yeast 3897

ELLEMAN, THOMAS C., AND THEO A. DOPHEIDE. The Sequence of SCMK-B2B, a High-Sulfur Protein from Wool Keratin 3900

ROYCHOUDHURY, RANAJIT. Enzymic Synthesis of Polynucleotides. Oligodeoxynucleotides with One 3′-Terminal Ribonucleotide as Primers for Polydeoxynucleotide Synthesis 3910

MOMOSE, KAZUTAKA, AND HARRY RUDNEY. 3-Polyprenyl-4-hydroxybenzoate Synthesis in the Inner Membrane of Mitochondria from *p*-Hydroxybenzoate and Isopentenylpyrophosphate. A Demonstration of Isoprenoid Synthesis in Rat Liver Mitochondria 3930

FREYCHET, PIERRE, RONALD KAHN, JESSE ROTH, AND DAVID M. NEVILLE, JR. Insulin Interactions with Liver Plasma Membranes. Independence of Binding of the Hormone and Its Degradation 3953

OSBORN, M. J., J. E. GANDER, E. PARISI, AND J. CARSON. Mechanism of Assembly of the Outer Membrane of *Salmonella typhimurium*. Isolation and Characterization of Cytoplasmic and Outer Membrane 3962

OSBORN, M. J., J. E. GANDER, AND E. PARISI. Mechanism of Assembly of the Outer Membrane of *Salmonella typhimurium*. Site of Synthesis of Lipopolysaccharide 3973

STRYDOM, DANIEL J. Snake Venom Toxins. The Amino Acid Sequences of Two Toxins from *Dendroaspis polylepis polylepis* (Black Mamba) Venom 4029

RYAN, MICHAEL F., AND ULRICH WESTPHAL. Steroid-Protein Interactions. XXIV. Progesterone-binding Affinity of Isoelectric Variants of Human α_1-Acid Glycoprotein 4050

HUSZAR, GABOR. Amino Acid Sequences Around the Two ε-*N*-Trimethyllysine Residues in Rabbit Skeletal Muscle Myosin 4057

YAMAJI, KENJI, KOZUE TADA, AND ANTHONY C. TRAKATELLIS. On the Biosynthesis of Insulin in Anglerfish Islets 4080

CHEMISTRY AND METABOLISM OF SUBSTANCES OF LOW MOLECULAR WEIGHT

VOLK, WESLEY A., NANCY L. SALOMONSKY AND DONALD HUNT. *Xanthomonas sinensis* Cell Wall Lipopolysaccharide. I. Isolation of 4,7-Anyhydro- and 4,8-Anhydro-3-deoxy-octulosonic Acid following Acid Hydrolysis of *Xanthomonas sinensis* Lipopolysaccharide 3881

PERFETTI, RANDOLPH, ROBERT J. CAMPBELL, JULIE TITUS, AND RICHARD A. HARTLINE. Catabolism of Pipecolate to Glutamate in *Pseudomonas putida* 4089

OXIDATION-REDUCTION AND BIOENERGETICS

BERZOFSKY, JAY A., J. PEISACH, AND J. O. ALBEN. Sulfheme Proteins. III. Carboxysulfmyoglobin: The Relation between Electron Withdrawal from Iron and Ligand Binding 3774

BERZOFSKY, JAY A., J. PEISACH, AND B. L. HORECKER. Sulfheme Proteins. IV. The Stoichiometry of Sulfur Incorporation and the Isolation of Sulfhemin, the Prosthetic Group of Sulfmyoglobin 3783

NELSON, NATHAN, AND EFRAIM RACKER. Partial Resolution of the Enzymes Catalyzing Photophosphorylation. X. Purification of Spinach Cytochrome *f* and Its Photooxidation by Resolved Photosystem I Particles 3848

WITTENBERG, BEATRICE A., JONATHAN B. WITTENBERG, AND ROBERT W. NOBLE. The Reaction of Ferrous Ascaris Perienteric Fluid Hemoglobin with Hydrogen Peroxide 4008

WARD, D. C., T. HORN, AND E. REICH. Fluorescence Studies of Nucleotides and Polynucleotides. III. Diphosphopyridine Nucleotide Analogues which Contain Fluorescent Purines 4014

SCHNEIDER, DONALD L., YASUO KAGAWA, AND EFRAIM RACKER. Chemical Modification of the Inner Mitochondrial Membrane 4074

ENZYMOLOGY

CRITCHLOW, JOHN E., AND H. BRIAN DUNFORD. Studies on Horseradish Peroxidase. IX. Kinetics of the Oxidation of *p*-Cresol by Compound II 3703

CRITCHLOW, JOHN E., AND H. BRIAN DUNFORD. Studies on Horseradish Peroxidase. X. The Mechanism of the Oxidation of *p*-Cresol, Ferrocyanide, and Iodide by Compound II 3714

JENCKS, WILLIAM P., MICHAEL GRESSER, MANUEL S. VALENZUELA, AND FRANCIS C. HUNEEUS. Acetyl Coenzyme A:Arylamine Acetyltransferase. Measurement of the Steady State Concentration of the Acetyl-Enzyme Intermediate 3756

TAI, HSIN-HSIUNG, AND KONRAD BLOCH. Squalene Epoxidase of Rat Liver 3767

COTTAM, G. LARRY, ALBERT S. MILDVAN, JAMES R. HUNSLEY, AND CLARENCE H. SUELTER. Proton Relaxation and Kinetic Studies of Ternary Complexes of an Allosteric Pyruvate Kinase from Yeast 3802

WONG, SHOW-CHU C., STEPHEN I. KANDEL, MARIANNE KANDEL, AND ALLAN G. GORNALL. Covalent Labeling of the Active Site of Human Carbonic Anhydrase B with *N*-Bromoacetylacetazolamide 3810

DELMER, DEBORAH PIERSON. The Purification and Properties of Sucrose Synthetase from Etiolated *Phaseolus aureus* Seedlings 3822

COLMAN, PAUL D., AND GABOR MARKUS. Conformational Changes in Aspartate Transcarbamylase. IV. Ligand Effects on Intersubunit Interactions 3829

BAKER, JOHN R., LENNART RODÉN, AND ALLEN C. STOOLMILLER. Biosynthesis of Chondroitin Sulfate Proteoglycan. Xylosyl Transfer to Smith-degraded Cartilage Proteoglycan and Other Exogenous Acceptors 3838

SOODSMA, JAMES F., CLAUDE PIANTADOSI, AND FRED

SNYDER. Partial Characterization of the Alkylglycerol Cleavage Enzyme System of Rat Liver..... 3923
TANAKA, NOBUYUKI, KICHIKO KOIKE, MINORU HAMADA, KIN-ICHI OTSUKA, TADASHI SUEMATSU, AND MASAHIKO KOIKE. Mammalian α-Keto Acid Dehydrogenase Complexes. VII. Resolution and Reconstitution of the Pig Heart 2-Oxoglutarate Dehydrogenase Complex..... 4043

CONTROL MECHANISMS AND BIOCHEMICAL GENETICS

KUMON, AKIRA, KAORU NISHIYAMA, HIROHEI YAMAMURA, AND YASUTOMI NISHIZUKA. Multiplicity of Adenosine 3′,5′-Monophosphate-dependent Protein Kinases from Rat Liver and Mode of Action of Nucleoside 3′,5′-Monophosphate..... 3726
CORBIN, JACKIE D., CHARLES O. BROSTROM, RANYA L. ALEXANDER AND EDWIN G. KREBS. Adenosine 3′,5′-Monophosphate-dependent Protein Kinase from Adipose Tissue..... 3736
PETERS, THEODORE, JR., AND JAMES C. PETERS. The Biosynthesis of Rat Serum Albumin. VI. Intracellular Transport of Albumin and Rates of Albumin and Liver Protein Synthesis *in Vivo* under Various Physiological Conditions..... 3858
STEIN, GARY, SUKHEN CHAUDHURI, AND RENATO BASERGA. Gene Activation in WI-38 Fibroblasts Stimulated to Proliferate. Role of Non-Histone Chromosomal Proteins..... 3918
KEMP, JOHN D., BERNT T. WALTHER, AND WILLIAM J. RUTTER. Protein Synthesis during the Secondary Developmental Transition of the Embryonic Rat Pancreas..... 3941
JOHNSTON, MARILYN F. M., ROGER K. KIPFER, AND ROBERT E. OLSON. Studies of Prothrombin Biosynthesis in Cell-free Systems. I. Comparison of Coagulation and Immunochemical Assays..... 3987
JOHNSTON, MARILYN F. M., AND ROBERT E. OLSON. Studies of Prothrombin Biosynthesis in Cell-free Systems. II. Incorporation of L-[U-^{14}C]Leucine into Prothrombin by Rat Liver Microsomes and Ribosomes..... 3994
JOHNSTON, MARILYN F. M., AND ROBERT E. OLSON. Studies of Prothrombin Biosynthesis in Cell-free Systems. III. Regulation by Vitamin K and Warfarin of Prothrombin Biosynthesis in Rat Liver Microsomes..... 4001
YANOVSKY, ALIZA, AND ABRAHAM LOYTER. The Mechanism of Cell Fusion. I. Energy Requirements for Virus-induced Fusion of Ehrlich Ascites Tumor Cells..... 4021
MILLIS, ALBERT J. T., AND YOSHITAKA SUYAMA. Effects of Chloramphenicol and Cycloheximide on the Biosynthesis of Mitochondrial Ribosomes in *Tetrahymena*..... 4063

COMMUNICATIONS

KING, HARLEY L., JR., AND DAVID R. WILKEN. Separation and Preliminary Studies on 2-Ketopantoyl Lactone and 2-Ketopantoic Acid Reductases of Yeast..... 4096
BARCLAY, RICHARD, AND RALPH G. YOUNT. Evidence for Myosin-like Intermediates in the Hydrolysis of Adenosine Triphosphate by Sperm-Tail Flagella..... 4098
NIGEN, ALAN M., PHILIP KEIM, ROBERT C. MARSHALL, JON S. MORROW, AND FRANK R. N. GURD. Carbon 13 Nuclear Magnetic Resonance Spectroscopy of Myoglobins and Ribonuclease A Carboxymethylated with Enriched [2-^{13}C]Bromoacetate..... 4100
MIZEL, STEVEN B., AND LESLIE WILSON. Inhibition of the Transport of Several Hexoses in Mammalian Cells by Cytochalasin B..... 4102

CORRECTIONS

IUPAC-IUB COMMISSION ON BIOCHEMICAL NOMENCLATURE. Symbols for Amino-Acid Derivatives and Peptides. Recommendations (1971). **Vol. 247 (1972), 977–983**..... 4106

July 10, 1972

ROON, ROBERT J., AND BRUCE LEVENBERG. Urea Amidolyase. I. Properties of the Enzyme from *Candida utilis*..... 4107
WHERRETT, JOHN R., AND SREBRENKA HUTEBER. Enrichment of Bis-(monoacylglyceryl) Phosphate in Lysosomes from Rat Liver..... 4114
SHIFRIN, SIDNEY, AND BARBARA G. SOLIS. L-Asparaginase from *Escherichia coli* B. Chemical Modifications of Tyrosyl Residues..... 4121
SCHOLNICK, PERRY L., LYDIA E. HAMMAKER, AND HARVEY S. MARVER. Soluble δ-Aminolevulinic Acid Synthetase of Rat Liver. I. Some Properties of the Partially Purified Enzyme..... 4126
SCHOLNICK, PERRY L., LYDIA E. HAMMAKER, AND HARVEY S. MARVER. Soluble δ-Aminolevulinic Acid Synthetase of Rat Liver. II. Studies Related to the Mechanism of Enzyme Action and Hemin Inhibition.. 4132
JOHNSON, LARRY W., AND SIDNEY F. VELICK. The Synthesis and Degradation of Fructose Diphosphate-Aldolase and Glyceraldehyde 3-Phosphate Dehydrogenase in Rabbit Liver..... 4138
AWAD, WILLIAM M., JR., AIDA R. SOTO, STEVEN SIEGEL, WILLIAM E. SKIBA, GARY G. BERNSTROM, AND MARIA S. OCHOA. The Proteolytic Enzymes of the K-1 Strain of *Streptomyces griseus* Obtained from a Commercial Preparation (Pronase). I. Purification of Four Serine Endopeptidases..... 4144
SIEGEL, STEVEN, AL H. BRADY, AND WILLIAM M. AWAD, JR. The Proteolytic Enzymes of the K-1 Strain of *Streptomyces griseus* Obtained from a Commercial Preparation (Pronase). II. The Activity of a Serine Enzyme in 6 M Guanidinium Chloride..... 4155
HOLMGREN, ARNE, AND BRITT-MARIE SJÖBERG. Immunochemistry of Thioredoxin. I. Preparation and Cross-Reactivity of Antibodies against Thioredoxin from *Escherichia coli* and *Bacteriophage* T4..... 4160
FRIEDMAN, PAUL A., A. HANSON KAPPELMAN, AND SEYMOUR KAUFMAN. Partial Purification and Characterization of Tryptophan Hydroxylase from Rabbit Hindbrain..... 4165
LOCKARD, RAYMOND E., AND JERRY B. LINGREL. Mouse Hemoglobin Messenger Ribonucleic Acid. Translational Capacities of Rabbit and Duck Reticulocyte Cell-free Systems Programmed with Mouse 9 S Ribonucleic Acid..... 4174
WOLFF, DONALD J., AND FRANK L. SIEGEL. Purification of a Calcium-binding Phosphoprotein from Pig Brain..... 4180
MELOCHE, H. PAUL, MARK A. LUCZAK, AND JAMES M. WURSTER. The Substrate Analog, Bromopyruvate, as Both a Substrate and Alkylating Agent for 2-Keto-3-deoxy-6-phosphogluconic Aldolase. Kinetic and Stereochemical Studies..... 4186
CHURCHICH, JORGE E. Interactions between Cystathionase and Aspartate Aminotransferase..... 4192
FINLAY, THOMAS H., JAY VALINSKY, KAZUYOSHI SATO, AND ROBERT H. ABELES. Studies on the Mechanism of Action of Coenzyme B_{12}. The Formation of 5′-Deoxyadenosine and $B_{12(r)}$ in the Reaction of Dioldehydrase with Chloroacetaldehyde..... 4197
WOLF, DIETER H., AND EBERHARD EBNER. Studies on the Reaction Mechanism of Adenosine Triphosphate:Glutamine Synthetase Adenyltransferase from *Escherichia coli* B. Conformational Changes Elicited by Effectors and Substrates:Reactivity of Sulfhydryl Groups..... 4208
WOHLHUETER, ROBERT M., EBERHARD EBNER, AND DIETER H. WOLF. Studies on the Reaction Mechanism of Adenosine Triphosphate:Glutamine Synthetase Adenylyltransferase from *Escherichia coli* B. Evidence for an Ordered Mechanism..... 4213
SPILBURG, CURTIS A., BRIAN M. HOFFMAN, AND DAVID H. PETERING. Coboglobins. Influence of the Apoprotein on Oxygen Binding to Cobaltomyoglobin..... 4219
KAZAKOVA, OLGA V., VASSILIY N. OREKHOVICH, LINDA POURCHOT, AND JAMES M. SCHUCK. Effect of Cathepsins D from Normal and Malignant Tissues on Synthetic Peptides..... 4224
HUDSON, BILLY G., AND ROBERT G. SPIRO. Studies on the Native and Reduced Alkylated Renal Glomerular Basement Membrane. Solubility, Subunit Size, and Reaction with Cyanogen Bromide..... 4229

HUDSON, BILLY G., AND ROBERT G. SPIRO. Fractionation of Glycoprotein Components of the Reduced Alkylated Renal Glomerular Basement Membrane... 4239
KERR, SYLVIA J. Competing Methyltransferase Systems... 4248
MAJERUS, PHILIP W., AND GRAEME N. BRODIE. The Binding of Phytohemagglutinins to Human Platelet Plasma Membranes... 4253
PESTKA, SIDNEY, RAKESH GOORHA, HENRY ROSENFELD, CLAIRE NEURATH, AND HENRY HINTIKKA. Studies on Transfer Ribonucleic Acid-Ribosome Complexes. XX. Peptidyl-Puromycin Synthesis on Mammalian Polyribosomes... 4258
NISSLEY, PETER, WAYNE B. ANDERSON, MARIA GALLO, ROBERT L. PERLMAN, AND IRA PASTAN. The Binding of Cyclic Adenosine Monophosphate Receptor to Deoxyribonucleic Acid... 4264
BARLEY, FRANK W., GORDON H. SATO, AND ROBERT H. ABELES. An Effect of Vitamin B_{12} Deficiency in Tissue Culture... 4270
MCPHIE, PETER. A Spectrophotometric Investigation of the Pepsinogen-Pepsin Conversion... 4277
MCDONALD, M. J., AND ROBERT W. NOBLE. The Effect of pH on the Rates of Ligand Replacement Reactions of Human Adult and Fetal Hemoglobins and Their Subunits... 4282
BORUN, THADDEUS W., DAVID PEARSON, AND WOON KI PAIK. Studies of Histone Methylation during the HeLa S-3 Cell Cycle... 4288
GOLDEMBERG, ADRIANA L., RICARDO N. FARÍAS, AND RAUL E. TRUCCO. Allosteric Changes of *p*-Nitrophenylphosphatase from Rat Erythrocytes in Fat Deficiency... 4299
BRUNORI, MAURIZIO, AND ERALDO ANTONINI. Kinetics of the Reaction with Oxygen of Mixtures of Oxy- and Carbon Monoxide Hemoglobin... 4305
AMES, GIOVANNA FERRO-LUZZI, AND JULIA E. LEVER. The Histidine-binding Protein J Is a Component of Histidine Transport. Identification of Its Structural Gene, *hisJ*... 4309
LEVER, JULIA E. Purification and Properties of a Component of Histidine Transport in *Salmonella typhimurium*. The Histidine-binding Protein J... 4317
HELTING, TORSTEN. Biosynthesis of Heparin. Solubilization and Partial Purification of Uridine Diphosphate Glucuronic Acid: Acceptor Glucuronosyltransferase from Mouse Mastocytoma... 4327
BRENNER, MICHAEL, JAMES A. LEWIS, DANIEL S. STRAUS, FRANCESCO DE LORENZO, AND BRUCE N. AMES. Histidine Regulation in *Salmonella typhimurium*. XIV. Interaction of the Histidyl Transfer Ribonucleic Acid Synthetase with Histidine Transfer Ribonucleic Acid 4333
HOWELL, LARRY G., THOMAS SPECTOR, AND VINCENT MASSEY. Purification and Properties of *p*-Hydroxybenzoate Hydroxylase from *Pseudomonas fluorescens*... 4340
LIU, WAN-KYNG, HYUN S. NAHM, CAROLYN M. SWEENEY, WILLIAM M. LAMKIN, H. NORDEAN BAKER, AND DARRELL N. WARD. The Primary Structure of Ovine Luteinizing Hormone. I. The Amino Acid Sequence of the Reduced and *S*-Aminoethylated S-Subunit (LH-α)... 4351
LIU, WAN-KYNG, HYUN S. NAHM, CAROLYN M. SWEENEY, GEORGE N. HOLCOMB, AND DARRELL N. WARD. The Primary Structure of Ovine Luteinizing Hormone. II. The Amino Acid Sequence of the Reduced, *S*-Carboxymeythlated A-Subunit (LH-β)... 4365
MCLAUGHLIN, ALAN C., MILDRED COHN, AND GEORGE L. KENYON. Specificity of Creatine Kinase for Guanidino Substrates. Kinetic and Proton Nuclear Magnetic Relaxation Rate Studies... 4382
BABIOR, BERNARD M., THOMAS H. MOSS, AND DENNIS C. GOULD. The Mechanism of Action of Ethanolamine Ammonia Lyase, a B_{12}-dependent Enzyme. X. A Study of the Reaction by Electron Spin Resonance Spectrometry... 4389
SHAIN, SYDNEY A. *In Vitro* Metabolism of 25-Hydroxycholecalciferol by Chick Intestinal and Renal Cell Preparations. Identification of a Metabolic Product as 1,25-Dihydroxycholecalciferol and Delineation of Its Metabolic Fate in Intestinal Cells... 4393
SHAIN, SYDNEY A. The *in Vitro* Metabolism of 25-Hydroxycholecalciferol to 1,25-Dihydroxycholecalciferol by Chick Renal Tubules. Effect of Actinomycin D, Puromycin, Calcium, and Parathyroid Hormone... 4404
FUJISAWA, HITOSHI, MOTOJI UYEDA, YUTAKA KOJIMA, MITSUHIRO NOZAKI, AND OSAMU HAYAISHI. Protocatechuate 3,4-Dioxygenase. II. Electron Spin Resonance and Spectral Studies on Interaction of Substrates and Enzyme... 4414
FUJISAWA, HITOSHI, KEITARO HIROMI, MOTOJI UYEDA, SACHIKO OKUNO, MITSUHIRO NOZAKI, AND OSAMU HAYAISHI. Protocatechuate 3,4-Dioxygenase. III. An Oxygenated Form of Enzyme as Reaction Intermediate... 4422

COMMUNICATIONS

COURTE, CLAUDE, AND JOAN WILLEMOT. Heterogeneity of Porcine Pituitary Luteinizing Hormone Subunits (LHα and LHβ) in 6 M Guanidine Hydrochloride Agarose Gel Chromatography. Comparison with Bovine Luteinizing Hormone Subunits... 4429

July 25, 1972

MARCEL, YVES L., AND GINZABURO SUZUE. Kinetic Studies on the Specificity of Long Chain Acyl Coenzyme A Synthetase from Rat Liver Microsomes... 4433
WANG, TAI-TZER, STEPHEN H. BISHOP, AND ALBERT HIMOE. Detection of Carbamate as a Product of the Carbamate Kinase-catalyzed Reaction by Stopped Flow Spectrophotometry... 4437
DAVIDSON, BARRIE E., ELIZABETH H. BLACKBURN, AND THEO. A. A. DOPHEIDE. Chorismate Mutase-Prephenate Dehydratase from *Escherichia coli* K-12. I. Purification, Molecular Weight, and Amino Acid Composition... 4441
DOPHEIDE, THEO. A. A., PAULINE CREWTHER, AND BARRIE E. DAVIDSON. Chorismate Mutase-Prephenate Dehydratase from *Escherichia coli* K-12. II. Kinetic Properties... 4447
RYRIE, IVAN J., AND ANDRE T. JAGENDORF. Correlation between a Conformational Change in the Coupling Factor Protein and the High Energy State in Chloroplasts... 4453
SHERTON, CORINNE C., AND IRA G. WOOL. Determination of the Number of Proteins in Liver Ribosomes and Ribosomal Subunits by Two-Dimensional Polyacrylamide Gel Electrophoresis... 4460
NACHMAN, RALPH L., AND BARBARA FERRIS. Studies on the Proteins of Human Platelet Membranes... 4468
KIMURA, TOKUJI, JULIA J. TING, AND JOHN J. HUANG. Studies on Adrenal Steroid Hydroxylases. Anomalous Fluorescence of a Tyrosyl Residue in Adrenal Iron-Sulfur Protein (Adrenodoxin)... 4476
BOSRON, WILLIAM F., AND RICHARD L. PRAIRIE. Triphosphopyridine Nucleotide-linked Aldehyde Reductase. I. Purification and Properties of the Enzyme from Pig Kidney Cortex... 4480
CHOU, CHI-SU, AND VICTOR W. RODWELL. Metabolism of Basic Amino Acids in *Pseudomonas putida*. γ-Guanidinobutyrate Amidinohydrolase... 4486
AVERNER, MELVIN J., AND NORMAN R. PACE. The Nucleotide Sequence of Marsupial 5 S Ribosomal Ribonucleic Acid... 4491
YANOFSKY, CHARLES, AND VIRGINIA HORN. Tryptophan Synthetase α Chain Positions Affected by Mutations near the Ends of the Genetic Map of *trpA* of *Escherichia coli*... 4494
DEUTSCH, H. F., SATOSHI FUNAKOSHI, TAKAAKI FUJITA, NAOYUKI TANIGUCHI, AND HIDEMATSU HIRAI. Isolation in Crystalline Form and Properties of Six Horse Erythrocyte Carbonic Anhydrases... 4499
YANG, YEU-ZU, AND JAMES F. PERDUE. Contractile Proteins of Cultured Cells. I. The Isolation and Characterization of an Actin-like Protein from Cultured Chick Embryo Fibroblasts... 4503
KENNEY, WILLIAM C., WOLFRAM H. WALKER, AND THOMAS P. SINGER. Studies on Succinate Dehydrogenase. XX. Amino Acid Sequence around the Flavin Site... 4510
YOCH, DUANE C., AND DANIEL I. ARNON. Two Biologically Active Ferredoxins from the Aerobic Nitrogen-fixing Bacterium, *Azotobacter vinelandii*... 4514

HASCALL, VINCENT C., RICK L. RIOLO, JAMES HAYWARD, JR., AND CLIFFORD C. REYNOLDS. Treatment of Bovine Nasal Cartilage Proteoglycan with Chondroitinases from *Flavobacterium heparinum* and *Proteus vulgaris* 4521

HASCALL, VINCENT C., AND RICK L. RIOLO. Characteristics of the Protein-Keratan Sulfate Core and of Keratan Sulfate Prepared from Bovine Nasal Cartilage Proteoglycan 4529

FELBERG, NORMAN T., AND THOMAS C. HOLLOCHER. Inactivation of Succinate Dehydrogenase by *N*-Ethylmaleimide. Stoichiometry and Chemistry 4539

GRIFFITHS, ROBERT W., AND GERALD J. GLEICH. Proteolytic Degradation of IgD and Its Relation to Molecular Conformation 4543

FUKUSHIMA, TAKESHI, AND TETSUO SHIOTA. Pterins in Human Urine 4549

BOHNERT, JANICE L., AND HIROSHI TANIUCHI. The Examination of the Presence of Amide Groups in Glutamic Acid and Aspartic Acid Residues of Staphylococcal Nuclease (Foggi Strain) 4557

DIETZ, GEORGE W. Dehydrogenase Activity Involved in the Uptake of Glucose 6-Phosphate by a Bacterial Membrane System 4561

ZIMMERMAN, DANIEL H., AND MILTON KERN. Synthesis and Secretion of γ-Globulin by Lymph Node Cells. X. The Generation of Incompletely Synthesized Immunoglobulin Heavy Chains 4566

KAHLENBERG, ARTHUR, DONNA DOLANSKY, AND RUTH ROHRLICK. D-Glucose Uptake by Isolated Human Erythrocyte Membranes *versus* D-Glucose Transport by Human Erythrocytes. Comparison of the Effects of Proteolytic and Phospholipase A_2 Digestion 4572

FEDOROFF, NINA V., AND NORTON D. ZINDER. Properties of the Phage f2 Replicase. I. Optimal Conditions for Replicase Activity and Analysis of the Polynucleotide Product Synthesized *in Vitro* 4577

FEDOROFF, NINA V., AND NORTON D. ZINDER. Properties of the Phage f2 Replicase. II. Comparative Studies on the Ribonucleic Acid-dependent and Poly(C)-dependent Activities of the Replicase 4586

CEDERBAUM, A. I., AND W. W. WAINIO. Binding of Iron and Copper to Bovine Heart Mitochondria. I. Quantitative Aspects and Stability 4593

CEDERBAUM, A. I., AND W. W. WAINIO. Binding of Iron and Copper to Bovine Heart Mitochondria. II. Effect on Mitochondrial Metabolism 4604

CEDERBAUM, A. I., AND W. W. WAINIO. Binding of Iron and Copper to Bovine Heart Mitochondria. III. Role of Mitochondrial Phospholipids and Thiols 4615

GILMOUR, R. STEWART, AND GORDON H. DIXON. Biosynthesis of Protamine in Trout Testis. V. *In Vitro* Synthesis of Protamine in a Trout Liver Cell-free System 4621

AL-JANABI, JASIM, JEAN A. HARTSUCK, AND JORDAN TANG. Kinetics and Mechanism of Pepsinogen Activation 4628

VAN LENTEN, LEE, AND GILBERT ASHWELL. The Binding of Desialylated Glycoproteins by Plasma Membranes of Rat Liver. Development of a Quantitative Inhibition Assay 4633

HUNTLEY, THOMAS E., AND PHILIPP STRITTMATTER. The Effect of Heme Binding on the Tryptophan Residue and the Protein Conformation of Cytochrome b_5 4641

HUNTLEY, THOMAS E., AND PHILIPP STRITTMATTER. The Reactivity of the Tyrosyl Residues of Cytochrome b_5 4648

DONELSON, JOHN E., AND RAY WU. Nucleotide Sequence Analysis of Deoxyribonucleic Acid. VI. Determination of 3′-Terminal Dinucleotide Sequences of Several Species of Duplex Deoxyribonucleic Acid Using *Escherichia coli* Deoxyribonucleic Acid Polymerase I. 4654

DONELSON, JOHN E., AND RAY WU. Nucleotide Sequence Analysis of Deoxyribonucleic Acid. VII. Characterization of *Escherichia coli* Exonuclease III Activity for Possible Use in Terminal Nucleotide Sequence Analysis of Duplex Deoxyribonucleic Acid 4661

PESTKA, SIDNEY. Studies on Transfer Ribonucleic Acid-Ribosome Complexes. XIX. Effect of Antibiotics on Peptidyl Puromycin Synthesis on Polyribosomes from *Escherichia coli* 4669

SPECTOR, THOMAS, AND VINCENT MASSEY. Studies on the Effector Specificity of *p*-Hydroxybenzoate Hydroxylase from *Pseudomonas fluorescens* 4679

LIPPITT, BILL, JOE M. MCCORD, AND IRWIN FRIDOVICH. The Sonochemical Reduction of Cytochrome *c* and Its Inhibition by Superoxide Dismutase 4688

SUMMARIA, LOUIS, LEONIDA ARZADON, PRISCILLA BERNABE, AND KENNETH C. ROBBINS. Studies on the Isolation of the Multiple Molecular Forms of Human Plasminogen and Plasmin by Isoelectric Focusing Methods 4691

HANSCH, CORWIN, JAMES SCHAEFFER, AND RICHARD KERLEY. Alcohol Dehydrogenase Structure-Activity Relationships 4703

August 10, 1972

WIEBEL, FRIEDRICH J., EDWIN J. MATTHEWS, AND HARRY V. GELBOIN. Ribonucleic Acid Synthesis-dependent Induction of Aryl Hydrocarbon Hydroxylase in the Absence of Ribosomal Ribonucleic Acid Synthesis and Transfer 4711

COLEMAN, JOSEPH E., AND ROBERT V. COLEMAN. Magnetic Circular Dichroism of Co (II) Carbonic Anhydrase 4718

CAMERON, LINDA E., AND H. B. LEJOHN. On the Involvement of Calcium in Amino Acid Transport and Growth of the Fungus *Achlya* 4729

SECEMSKI, ISAAC I., SHERWIN S. LEHRER, AND GUSTAV E. LIENHARD. A Transition State Analog for Lysozyme 4740

KUMAR, SURIENDER, RICHARD A. MUESING, AND JOHN W. PORTER. Conformational Changes, Inactivation, and Dissociation of Pigeon Liver Fatty Acid Synthetase Complex. Effects of Sonic Strength, pH, and Temperature 4749

GUTTE, BERND, MICHAEL C. LIN, DANIEL G. CALDI, AND R. B. MERRIFIELD. Reactivation of des(119-, 120-, or 121–124) Ribonuclease A by Mixture with Synthetic COOH-terminal Peptides of Varying Lengths 4763

LIN, MICHAEL C., BERND GUTTE, DANIEL G. CALDI, STANFORD MOORE, AND R. B. MERRIFIELD. Reactivation of des(119–124) Ribonuclease A by Mixture with Synthetic COOH-terminal Peptides; the Role of Phenylalanine-120 4768

MARDER, VICTOR J., ANDRZEJ Z. BUDZYŃSKI, AND HAROLD L. JAMES. High Molecular Weight Derivatives of Human Fibrinogen Produced by Plasmin. III. Their NH_2-terminal Amino Acids and Comparison with the "NH_2-terminal Disulfide Knot" 4775

VANCE, PAT G., BERNARD B. KEELE, JR., AND K. V. RAJAGOPALAN. Superoxide Dismutase from *Streptococcus mutans*. Isolation and Characterization of Two Forms of the Enzyme 4782

VERPOORTE, JACOB A. Purification of Two β-*N*-Acetyl-D-glucosaminidases from Beef Spleen 4787

YU, CHENG KAI, AND L. S. DIETRICH. Purification and Properties of Yeast Nicotinamide Adenine Dinucleotide Synthetase 4794

REHFELD, DWAYNE W., AND N. E. TOLBERT. Aminotransferases in Peroxisomes from Spinach Leaves 4803

KHOO, JOHN C., LEONARD JARETT, STEVEN E. MAYER, AND DANIEL STEINBERG. Subcellular Distribution of and Epinephrine-induced Changes in Hormone-sensitive Lipase, Phosphorylase, and Phosphorylase Kinase in Rat Adipocytes 4812

ITANO, HARVEY A., AND ELIZABETH A. ROBINSON. 4-Thialaminine, a Strongly Basic Chemical Modification of Cysteine 4819

INOUE, HIDEO, AND JOHN M. LOWENSTEIN. Acetyl Coenzyme A Carboxylase from Rat Liver. Purification and Demonstration of Different Subunits 4825

JOINT, IAN R., IAN MORRIS, AND R. C. FULLER. Purification of a Complex of Alkaline Fructose 1,6-Biphosphatase and Phosphoribulokinase from *Rhodospirillum rubrum*..... 4833

KLUG, DINA, JOSEPH RABANI, AND IRWIN FRIDOVICH. A Direct Demonstration of the Catalytic Action of Superoxide Dismutase through the Use of Pulse Radiolysis..... 4839

BUONOCORE, VINCENZO, MARTIN H. HARRIS, AND SONDRA SCHLESINGER. Properties of Tyrosyl Transfer Ribonucleic Acid Synthetase from Two *tyrS* Mutants of *Escherichia coli* K-12..... 4843

LAMBOWITZ, ALAN M., EDWIN W. SMITH, AND CAROLYN W. SLAYMAN. Electron Transport in *Neurospora* Mitochondria. Studies on Wild Type and *Poky*..... 4850

LAMBOWITZ, ALAN M., EDWIN W. SMITH, AND CAROLYN W. SLAYMAN. Oxidative Phosphorylation in *Neurospora* Mitochondria. Studies on Wild Type, *Poky*, and Chloramphenicol-induced Wild Type..... 4859

PETERSON, JAMES D., SOOJA NEHRLICH, PHILIP E. OYER, AND DONALD F. STEINER. Determination of the Amino Acid Sequence of the Monkey, Sheep, and Dog Proinsulin C-Peptides by a Semi-micro Edman Degradation Procedure..... 4866

PETRACK, BARBARA, FRED SHEPPY, VALENTINA FETZER, THOMAS MANNING, HERBERT CHERTOCK, AND DANIEL MA. Effect of Ferrous Ion on Tyrosine Hydroxylase of Bovine Adrenal Medulla..... 4872

WALKER, R. T., AND UTTAM L. RAJBHANDARY. Studies on Polynucleotides. CI. *Escherichia coli* Tyrosine and Formylmethionine Transfer Ribonucleic Acids: Effect of Chemical Modification of 4-Thiouridine to Uridine on Their Biological Properties..... 4879

BERNLOHR, ROBERT W. ^{18}Oxygen Probes of Protein Turnover, Amino Acid Transport, and Protein Synthesis in *Bacillus licheniformis*..... 4893

TWETO, JOHN, AND ALLAN R. LARRABEE. The Effect of Fasting on Synthesis and 4′-Phosphopantetheine Exchange in Rat Liver Fatty Acid Synthetase..... 4900

PAQUET, ROBERT J., AND MYRON A. MEHLMAN. Thiamin Deficiency. Effect of Fatty Acids on Glucose Synthesis in Kidney Cortex Slices from Thiamin-deficient Rats..... 4905

VECCHIO, GIANCARLO, GIOVANNI M. CLAAR, AND GAETANO SALVATORE. Biosynthesis of Thyroid Iodoproteins *in Vivo* and in Tissue Slices..... 4908

COMMUNICATIONS

BRICKER, LEE A., AND GERALD S. LEVEY. Evidence for Regulation of Cholesterol and Fatty Acid Synthesis in Liver by Cyclic Adenosine 3′,5′-Monophosphate.. 4914

HUNTLEY, GAEL H., AND GORDON H. DIXON. The Primary Structure of the NH_2-terminal Region of Histone T..... 4916

August 25, 1972

CUMULATIVE AUTHOR INDEX. NUMBERS 1 THROUGH 16.. iii

BIRGE, CLAIRE H., AND P. ROY VAGELOS. Acyl Carrier Protein. XVI. Intermediate Reactions of Unsaturated Fatty Acid Synthesis in *Escherichia coli* and Studies of fab B Mutants..... 4921

BIRGE, CLAIRE H., AND P. ROY VAGELOS. Acyl Carrier Protein. XVII. Purification and Properties of β-Hydroxyacyl Acyl Carrier Protein Dehydrase..... 4930

VARSANO-AHARON, NORA, AND STANLEY ULICK. Differences in Antipodal Specificity in the Binding of Steroids to Serum Proteins..... 4939

MOSS, JOEL, AND M. DANIEL LANE. Acetyl Coenzyme A Carboxylase. III. Further Studies on the Relation of Catalytic Activity to Polymeric State..... 4944

MOSS, JOEL, AND M. DANIEL LANE. Acetyl Coenzyme A Carboxylase. IV. Biotinyl Prosthetic Group-independent Malonyl Coenzyme A Decarboxylation and Carboxyl Transfer: Generalization to Other Biotin Enzymes..... 4952

REINER, ALBEY M. Metabolism of Aromatic Compounds in Bacteria. Purification and Properties of the Catechol-forming Enzyme, 3,5-Cyclohexadiene-1,2-diol-1-carboxylic Acid (NAD^+) Oxidoreductase (Decarboxylating)..... 4960

LAPOINTE, JACQUES, AND DIETER SÖLL. Glutamyl Transfer Ribonucleic Acid Synthetase of *Escherichia coli*. I. Purification and Properties..... 4966

LAPOINTE, JACQUES, AND DIETER SÖLL. Glutamyl Transfer Ribonucleic Acid Synthetase of *Escherichia coli*. II. Interaction with Intact Glutamyl Transfer Ribonucleic Acid..... 4975

LAPOINTE, JACQUES, AND DIETER SÖLL. Glutamyl Transfer Ribonucleic Acid Synthetase of *Escherichia coli*. III. Influence of the 46K Protein on the Affinity of the 56K Glutamyl Transfer Ribonucleic Acid Synthetase for Its Substrates..... 4982

SCHNEIDER, ARTHUR B., AND HAROLD EDELHOCH. Polypeptide Hormone Interaction. II. Glucagon Binding to Lysolecithin..... 4986

SCHNEIDER, ARTHUR B., AND HAROLD EDELHOCH. Polypeptide Hormone Interaction. III. Conformational Changes of Glucagon Bound to Lysolecithin..... 4992

EXTON, JOHN H., JERRY G. CORBIN, AND SANDRA C. HARPER. Control of Gluconeogenesis in Liver. V. Effects of Fasting, Diabetes, and Glucagon on Lactate and Endogenous Metabolism in the Perfused Rat Liver..... 4996

SPRECHMAN, LARRY M., AND VERNON M. INGRAM. Hemoglobin Synthesis at Elevated Temperatures..... 5004

UEDA, TETSUFUMI, AND MINOR J. COON. Enzymatic ω Oxidation. VII. Reduced Diphosphopyridine Nucleotide-Rubredoxin Reductase: Properties and Function as an Electron Carrier in ω Hydroxylation 5010

MCLAUGHLIN, CARLA L., AND ALAN SOLOMON. Bence-Jones Proteins and Light Chains of Immunoglobulins. VII. Localization of Antigenic Sites Responsible for Immunochemical Heterogeneity of κ Chains.... 5017

SEDWICK, W. DAVID, TERESA SHU-FONG WANG, AND DAVID KORN. Purification and Properties of Nuclear and Cytoplasmic Deoxyribonucleic Acid Polymerases from Human KB Cells..... 5026

IHLE, JAMES N., AND LEON S. DURE, III. The Developmental Biochemistry of Cottonseed Embryogenesis and Germination. I. Purification and Properties of a Carboxypeptidase from Germinating Cotyledons... 5034

IHLE, JAMES N., AND LEON S. DURE, III. The Developmental Biochemistry of Cottonseed Embryogenesis and Germination. II. Catalytic Properties of the Cotton Carboxypeptidase..... 5041

IHLE, JAMES N., AND LEON S. DURE, III. The Developmental Biochemistry of Cottonseed Embryogenesis and Germination. III. Regulation of the Biosynthesis of Enzymes Utilized in Germination..... 5048

NIMBERG, RICHARD B., AND KARL SCHMID. Purification and Characterization of a Dialyzable 0.6 S γ_2-Globulin from Normal Human Plasma..... 5056

SLOMIANY, BRONISLAW L., AND KARL MEYER. Isolation and Structural Studies of Sulfated Glycoproteins of Hog Gastric Mucosa..... 5062

BACHORIK, PAUL S., AND L. S. DIETRICH. The Purification and Properties of Detergent-solubilized Rat Liver Nucleotide Pyrophosphatase..... 5071

NISHIHARA, HIROMU, AND EUGENE E. DEKKER. Purification, Substrate Specificity and Binding, β-Decarboxylase Activity, and other Properties of *Escherichia coli* 2-Keto-4-hydroxyglutarate Aldolase..... 5079

SCHUSTER, SHELDON M., AND MERLE S. OLSON. Regulation of Pyruvate Oxidation in Isolated Rabbit Heart Mitochondria..... 5088

STAUDENBAUER, WALTER, AND JACK L. STROMINGER. Activation of D-Aspartic Acid for Incorporation into Peptidoglycan..... 5095

LAMONT, HAYES C., WALTER L. STAUDENBAUER, AND JACK L. STROMINGER. Partial Purification and Characterization of an Aspartate Racemase from *Streptococcus faecalis*..... 5103

STONE, K. JOHN, AND JACK L. STROMINGER. Isolation of C_{55}-Isoprenylpyrophosphate from *Micrococcus lysodeikticus* 5107
WILLOUGHBY, EILEEN, YASUSHI HIGHASI, AND JACK L. STROMINGER. Enzymatic Dephosphorylation of C_{55}-Isoprenylphosphate 5113
GOLDMAN, RACHEL, AND JACK L. STROMINGER. Purification and Properties of C_{55}-Isoprenylpyrophosphate Phosphatase from *Micrococcus lysodeikticus* 5116
SANDERMANN, HEINRICH, JR., AND JACK L. STROMINGER. Purification and Properties of C_{55}-Isoprenoid Alcohol Phosphokinase from *Staphylococcus aureus* 5123
MARCHIN, GEORGE L., M. MARGARET COMER, AND FREDERICK C. NEIDHARDT. Viral Modification of the Valyl Transfer Ribonucleic Acid Synthetase of *Escherichia coli* 5132
YOGEESWARAN, G., ROSE SHEININ, JOHN R. WHERRETT, AND ROBERT K. MURRAY. Studies on the Glycosphingolipids of Normal and Virally Transformed 3T3 Mouse Fibroblasts 5146
GOLDWASSER, EUGENE, AND CHARLES K.-H. KUNG. The Molecular Weight of Sheep Plasma Erythropoietin 5159
FISHER, DANIEL B., RICHARD KIRKWOOD, AND SEYMOUR KAUFMAN. Rat Liver Phenylalanine Hydroxylase, an Iron Enzyme 5161
FUTTERMAN, SIDNEY, AND JORAM HELLER. The Enhancement of Fluorescence and the Decreased Susceptibility to Enzymatic Oxidation of Retinol Complexed with Bovine Serum Albumin, β-Lactoglobulin, and the Retinol-binding Protein of Human Plasma 5168
BAKER, ALAN P., JOHN L. SAWYER, J. RONALD MUNRO, GILBERT P. WEINER, AND LEONARD M. HILLEGASS. Glycosyltransferases of Canine Respiratory Tissue 5173
JOYS, TERENCE M., AND VIKTORIJA RANKIS. The Primary Structure of the Phase-1 Flagellar Protein of *Salmonella typhimurium*. I. The Tryptic Peptides 5180
MOSS, BERNARD, AND EDITH N. ROSENBLUM. Hydroxylapatite Chromatography of Protein-Sodium Dodecyl Sulfate Complexes. A New Method for the Separation of Polypeptide Subunits 5194
CONNETT, RICHARD J., AND J. J. BLUM. Metabolic Pathways in *Tetrahymena*. Estimation of Rates of the Tricarboxylic Acid Cycle, Glyoxylate Cycle, Lipid Synthesis, and Related Pathways by Use of Multiple Labeled Substrates 5199
MOSESSON, M. W., J. S. FINLAYSON, R. A. UMFLEET, AND D. GALANAKIS. Human Fibrinogen Heterogeneities. I. Structural and Related Studies of Plasma Fibrinogens Which Are High Solubility Catabolic Intermediates 5210
FINLAYSON, J. S., M. W. MOSESSON, T. J. BRONZERT, AND J. J. PISANO. Human Fibrinogen Heterogeneities. II. Cross-Linking Capacity of High Solubility Catabolic Intermediates 5220
MOSESSON, M. W., J. S. FINLAYSON, AND R. A. UMFLEET. Human Fibrinogen Heterogeneities. III. Identification of γ Chain Variants 5223
KATZ, SAM, MARY E. SHAW, SHAWN CHILLAG, AND JANE E. MILLER. Protein-Ionic Detergent Interaction. Volume and Electrophoretic Changes Produced by Sodium Dodecyl Sulfate Reaction with Bovine Serum Albumin 5228
GLASS, RICHARD D., AND DARRELL DOYLE. On the Measurement of Protein Turnover in Animal Cells 5234
ROBERTSON, HUGH D., SIDNEY ALTMAN, AND JOHN D. SMITH. Purification and Properties of a Specific *Escherichia coli* Ribonuclease which Cleaves a Tyrosine Transfer Ribonucleic Acid Precursor 5243
WATERSON, ROBERT M., G. MICHAEL HASS, AND ROBERT L. HILL. Enoyl Coenzyme A Hydratase (Crotonase). Enhancement of the Rate of Hydration of Crotonylpantetheine by Coenzyme A and Related Compounds 5252
WATERSON, ROBERT M., AND ROBERT L. HILL. Enoyl Coenzyme A Hydratase (Crotonase) Catalytic Properties of Crotonase and Its Possible Regulatory Role in Fatty Acid Oxidation 5258
WATERSON, ROBERT M., FRANCIS J. CASTELLINO, G. MICHAEL HASS, AND ROBERT L. HILL. Purification and Characterization of Crotonase from *Clostridium acetobutylicum* 5266

COMMUNICATIONS

STULL, JAMES T., CHARLES O. BROSTROM, AND EDWIN G. KREBS. Phosphorylation of the Inhibitor Component of Troponin by Phosphorylase Kinase 5272
ENGLAND, PAUL J., JAMES T. STULL, AND EDWIN G. KREBS. Dephosphorylation of the Inhibitor Component of Troponin by Phosphorylase Phosphatase 5275

September 10, 1972

SUGINAKA, HIDEKAZU, PETER M. BLUMBERG, AND JACK L. STROMINGER. Multiple Penicillin-binding Components in *Bacillus subtilis, Bacillus cereus, Staphylococcus aureus, and Escherichia coli* 5279
STAUDENBAUER, WALTER, EILEEN WILLOUGHBY, AND JACK L. STROMINGER. Further Studiee of the D-Aspartic Acid-activating Enzyme of *Streptococcus faecalis* and Its Attachment to the Membrane 5289
WICKUS, GARY G., AND JACK L. STROMINGER. Penicillin-sensitive Transpeptidation during Peptidoglycan Biosynthesis in Cell-free Preparations from *Bacillus megaterium*. I. Incorporation of Free Diaminopimelic Acid into Peptidoglycan 5297
WICKUS, GARY G., AND JACK L. STROMINGER. Penicillin-sensitive Transpeptidation during Peptidoglycan Biosynthesis in Cell-free Preparations from *Bacillus megaterium*. II. Effect of Penicillins and Cephalosporins on Bacterial Growth and *in Vitro* Transpeptidation 5307
TATE, SURESH S., FANG-YUN LEU, AND ALTON MEISTER. Rat Liver Glutamine Synthetase. Preparation, Properties, and Mechanism of Inhibition by Carbamyl Phosphate 5312
GHOSH, HARA P., KAKOLI GHOSH, AND M. CLELIA GANOZA. Mechanism of Polypeptide Chain Termination. Translation of Tandem Amber Termination Codons by an Amber Suppressor Transfer Ribonucleic Acid 5322
SCHUTZ, GUNTHER, AND PHILIP FEIGELSON. Purification and Properties of Rat Liver Tryptophan Oxygenase 5327
SCHUTZ, GUNTHER, EULA CHOW, AND PHILIP FEIGELSON. Regulatory Properties of Hepatic Tryptophan Oxygenase 5333
KABAT, DAVID. Turnover of Phosphoryl Groups in Reticulocyte Ribosomal Phosphoproteins 5338
BITTE, LAWRENCE, AND DAVID KABAT. Phosphorylation of Ribosomal Proteins in Sarcoma 180 Tumor Cells 5345
HASCHKE, RICHARD H., KLAUS W. GRÄTZ, AND LUDWIG M. G. HEILMEYER, JR. Control of Phosphorylase Activity in a Muscle Glycogen Particle. IV. Activation of Phosphorylase by Nucleotides and Phosphorylation 5351
CRYSTAL, RONALD G., ARTHUR W. NIENHUIS, NORTON A. ELSON, AND W. FRENCH ANDERSON. Initiation of Globin Synthesis. Preparation and Use of Reticulocyte Ribosomes Retaining Initiation Region Messenger Ribonucleic Acid Fragments 5357
KORNBERG, THOMAS, AND MALCOLM L. GEFTER. Deoxyribonucleic Acid Synthesis in Cell-free Extracts. IV. Purification and Catalytic Properties of Deoxyribonucleic Acid Polymerase. III 5369
LEVITAN, IRWIN B., WALTER E. MUSHYNSKI, AND GALO RAMIREZ. Highly Purified Synaptosomal Membranes from Rat Brain. Preparation and Characterization 5376
RAMIREZ, GALO, IRWIN B. LEVITAN, AND WALTER E. MUSHYNSKI. Highly Purified Synaptosomal Membranes from Rat Brain. Incorporation of Amino Acids into Membrane Proteins *in Vitro* 5382
CHAN, LAWRENCE, AND LUIS GLASER. Purification of N-Acetylmuramic Acid-L-Alanine Amidase from *Bacillus megaterium* 5391
MIYATAKE, TADASHI, AND KUNIHIKO, SUZUKI. Galactosyltriphingosine Galactosyl Hydrolase. Partial Purification and Properties of the Enzyme in Rat Brain 5398
WEATHERFORD, STEPHEN C., LARRY ROSEN, LESTER GORELIC, AND DAVID APIRION. *Escherichia coli* Strains with Thermolabile Ribonuclease II Activity 5404
BANERJEE, SHAILESH P., AND SHIRLEY M. E. WONG. Ef-

fect of Potassium on Sodium-dependent Adenosine Diphosphate-Adenosine Triphosphate Exchange Activity in Kidney Microsomes 5409
Boos, Winfried. Structurally Defective Galactose-binding Protein Isolated from a Mutant Negative in the β-Methylgalactoside Transport System of *Escherichia coli* 5414
Fowler, Audree V. The Amino Acid Sequence of β-Galactosidase. II. Tryptic Peptides of the Maleylated Protein and Sequences of Some Tryptic Peptides 5425
Zabin, Irving, and Audree V. Fowler. The Amino Acid Sequence of β-Galactosidase. III. The Sequences of NH_2- and COOH-terminal Tryptic Peptides 5432
Schelten, Jakob, Peter Schlecht, Werner Schmatz, and Adalbert Mayer. Neutron Small Angle Scattering of Hemoglobin 5436
Wykle, Robert L., M. L. Blank, Boyd Malone, and Fred Snyder. Evidence for a Mixed Function Oxidase in the Biosynthesis of Ethanolamine Plasmalogens from 1-Alkyl-2-acyl-*sn*-glycero-3-phosphorylethanolamine 5442
Rodgers, Richard, and Erwin Chargaff. Nucleoside Phosphotransferase from Carrot. Chemical Characterization and Investigation of Catalytic Sites 5448
Cantz, Michael, Andreas Chrambach, Gideon Bach, and Elizabeth F. Neufeld. The Hunter Corrective Factor. Purification and Preliminary Characterization 5456
Eppenberger, Urs, and Sung L. Hsia. Binding of Steroid Hormones by the 105,000 × *g* Supernatant Fraction from Homogenates of Rat Skin and Variations during the Hair Cycle 5463
Kaminskas, Edvardas. Serum-mediated Stimulation of Protein Synthesis in Ehrlich Ascites Tumor Cells ... 5470
Martin, David W., Jr., and Nancy T. Owen. Repression and Derepression of Purine Biosynthesis in Mammalian Hepatoma Cells in Culture 5477
Katzman, Richard L., and Andrew H. Kang. The Presence of Fucose, Mannose, and Glucosamine-containing Heteropolysaccharide in Collagen from the Sea Anemone *Metridium dianthus* 5486
Louie, Andrew J., and Gordon H. Dixon. Trout Testis Cells. I. Characterization by Deoxyribonucleic Acid and Protein Analysis of Cells Separated by Velocity Sedimentation 5490
Louie, Andrew J., and Gordon H. Dixon. Trout Testis Cells. II. Synthesis and Phosphorylation of Histones and Protamines in Different Cell Types 5498
Candido, E. Peter M., and Gordon H. Dixon. Trout Testis Cells. III. Acetylation of Histones in Different Cell Types from Developing Trout Testis 5506
Tsai, Huan C., Richard G. Wong, and Anthony W. Norman. Studies on Calciferol Metabolism. IV. Subcellular Localization of 1,25-Dihydroxy-vitamin D_3 in Intestinal Mucosa and Correlation with Increased Calcium Transport 5511
Omdahl, John L., and Hector F. DeLuca. Rachitogenic Activity of Dietary Strontium. I. Inhibition of Intestinal Calcium Absorption and 1,25-Dihydroxycholecalciferol Synthesis 5520
DeSa, Richard J. Putrescine Oxidase from *Micrococcus rubens*. Purification and Properties of the Enzyme ... 5527
Jungmann, Richard A., and John S. Schweppe. Mechanism of Action of Gonadotropin. I. Evidence for Gonadotropin-induced Modifications of Ovarian Nuclear Basic and Acidic Protein Biosynthesis, Phosphorylation, and Acetylation 5535
Jungmann, Richard A., and John S. Schweppe. Mechanism of Action of Gonadotropin. II. Control of Ovarian Nuclear Ribonucleic Acid Polymerase Activity and Chromatin Template Capacity 5543
Berezney, Ronald, Linda K. Macaulay, and Frederick L. Crane. The Purification and Biochemical Characterization of Bovine Liver Nuclear Membranes 5549
Berezney, Ronald, and Frederick L. Crane. Characterization of Electron Transport Activity in Bovine Liver Nuclear Membranes 5562
Frenkel, Rene. Bovine Heart Malic Enzyme. II. Reversibility of the Reaction 5569
Carey, William F., and Julian R. E. Wells. Phaseolain. A Plant Carboxypeptidase of Unique Specificity 5573
Carpenter, Frederick H., and Kathryn Tinker Harrington. Intermolecular Cross-linking of Monomeric Proteins and Cross-Linking of Oligomeric Proteins as a Probe of Quaternary Structure. Application to Leucine Aminopeptidase (Bovine Lens) 5580
Fournier, Raymond E., Michael N. McKillen, Arthur B. Pardee, and Klaus Willecke. Transport of Dicarboxylic Acids in *Bacillus subtilis*. Inducible Uptake of L-Malate 5587
Markland, Francis S., Douglas M. Brown, and Emil L. Smith. Subtilisin Amylosaccharicitus. I. Physicochemical Characterization 5596
Markland, Francis S., Masumi Kurihara, and Emil L. Smith. Subtilisin Amylosaccharicitus. II. Isolation and Sequence of the Tryptic and Cyanogen Bromide Peptides 5602
Kurihara, Masumi, Francis S. Markland, and Emil L. Smith. Subtilisin Amylosaccharicitus. III. Isolation and Sequence of the Chymotryptic Peptides and the Complete Amino Acid Sequence 5619
Spector, Thomas, and Vincent Massey. *p*-Hydroxybenzoate Hydroxylase from *Pseudomonas fluorescens*. Evidence for an Oxygenated Flavin Intermediate 5632
Goldberg, Allan R., and Jerard Hurwitz. Studies on Termination of *in Vitro* Ribonucleic Acid Synthesis by Rho Factor 5637

COMMUNICATIONS

Kuromizu, Kenji, and Johannes Meienhofer. Reactions in Liquid Ammonia. III. Complete Aminoethylation of Thiol Groups in Peptides and Proteins by Ethylenimine in Liquid Ammonia 5646
Faber, Lee E., Mary L. Sandmann, and Homer E. Stavely. Progesterone-binding Proteins of the Rat and Rabbit Uterus 5648
Johnson, Edward M., Tetsufumi Ueda, Hiroo Maeno, and Paul Greengard. Adenosine 3′,5′-Monophosphate-dependent Phosphorylation of a Specific Protein in Synaptic Membrane Fractions from Rat Cerebrum 5650
Ein, Daniel, Shigeru Kimura, William D. Terry, Judith Magnotta, and George G. Glenner. Amino Acid Sequence of an Amyloid Fibril Protein of Unknown Origin 5653
Johnson, Malcolm, Pamela Davison, and Peter W. Ramwell. Carnitine-dependent β Oxidation of Prostaglandins 5656

CORRECTIONS

Lerner, Edith, Austin L. Shug, Charles Elson, and Earl Shrago. Reversible Inhibition of Adenine Nucleotide Translocation by Long Chain Fatty Acyl Coenzyme A Esters in Liver Mitochondria of Diabetic and Hibernating Animals. **Vol. 247, 1513 (1972)** 5659
Marshall, Thomas H., and Ay Akgün. The Specificity of Porcine Elastase and α-Chymotrypsin. Effect of Fatty Acid Chain Length in a Homologous Series of Nitrophenyl Esters. **Vol. 246, 6019 (1971)** 5659
Halford, Stephen E., David A. Lennette, and Milton J. Schlesinger. A Mutationally Altered Alkaline Phosphatase from *Escherichia coli*. II. Structural and Catalytic Properties of the Activated Enzyme. **Vol. 247, 2095 (1972)** 5659
Purich, Daniel L., and Herbert J. Fromm. The Kinetics and Regulation of Rat Brain Hexokinase. **Vol. 246, 3456 (1971)** 5660

September 25, 1972

Erickson, John S., and Christopher K. Mathews. Spectral Changes Associated with Binding of Folate Compounds to Bacteriophage T4 Dihydrofolate Reductase 5661
Blackburn, Michael N., and Ernst A. Noltmann. Physical Studies on the Subunit Structure of Rabbit Muscle Phosphoglucose Isomerase 5668
Rosenbaum, Nadja, and Malcolm L. Gefter. Δ^2-Isopentenylpyrophosphate: Transfer Ribonucleic Acid Δ^2-Isopentenyltransferase from *Escherichia*

MORRIS, MARGOT L., SHIH-CHING LEE, AND ALFRED E. HARPER. Influence of Differential Induction of Histidine Catabolic Enzymes on Histidine Degradation *in Vivo* 5793

MCNAMARA, DONALD J., FORREST W. QUACKENBUSH, AND VICTOR W. RODWELL. Regulation of Hepatic 3-Hydroxy-3-methylglutaryl Coenzyme A Reductase. Developmental Pattern 5805

JACOBSEN, GERALD B., AND VICTOR W. RODWELL. A *Bacillus* Ribonucleic Acid Phosphodiesterase with Associated 5′-Nucleotidase Activity 5811

ASHMAN, LEONIE K., D. BRUCE KEECH, JOHN C. WALLACE, AND JAN NIELSEN. Sheep Kidney Pyruvate Carboxylase. Studies on Its Activation by Acetyl Coenzyme A and Characteristics of Its Acetyl Coenzyme A Independent Reaction 5818

LABELLE, EDWARD F., JR., AND AMIYA K. HAJRA. Enzymatic Reduction of Alkyl and Acyl Derivatives of Dihydroxyacetone Phosphate by Reduced Pyridine Nucleotides 5825

LABELLE, EDWARD F., JR., AND AMIYA K. HAJRA. Biosynthesis of Acyl Dihydroxyacetone Phosphate in Subcellular Fractions of Rat Liver 5835

EDELSTEIN, CELINA, CHANG T. LIM, AND ANGELO M. SCANU. On the Subunit Structure of the Protein of Human Serum High Density Lipoprotein. I. A Study of Its Major Polypeptide Component (Sephadex, Fraction III) 5842

SCANU, ANGELO M., CHANG T. LIM, AND CELINA EDELSTEIN. On the Subunit Structure of the Protein of Human Serum High Density Lipoprotein. II. A Study of Sephadex Fraction IV 5850

BANKER, GARY A., AND CARL W. COTMAN. Measurement of Free Electrophoretic Mobility and Retardation Coefficient of Protein-Sodium Dodecyl Sulfate Complexes by Gel Electrophoresis. A Method to Validate Molecular Weight Estimates 5856

DAVIS, LINDA, NANCY LEE, AND LUIS GLASER. On the Mechanism of the Pentose Phosphate Epimerases 5862

LAIPIS, PHILIP J., AND A. T. GANESAN. A Deoxyribonucleic Acid Polymerase I-deficient Mutant of *Bacillus subtilis* 5867

FAREED, GEORGE C., EDWIN D. SEBRING, AND NORMAN P. SALZMAN. Cleavage of Replicative Intermediates of Simian Virus 40 Deoxyribonucleic Acid by the Restriction Endonuclease of *Escherichia coli* B 5872

SAKAMOTO, NAOTO, G. WESLEY HATFIELD, AND HARRIS S. MOYED. Physical Properties and Subunit Structure of Xanthosine 5′-Phosphate Aminase 5880

SAKAMOTO, NAOTO, G. WESLEY HATFIELD, AND HARRIS S. MOYED. Denaturation and Renaturation of Xanthosine 5′-Phosphate Aminase 5888

GOZ, BARRY, AND PETER VOYTEK. Arginyl Transfer Ribonucleic Acid Protein Transferase and Endogenous Acceptor Proteins in Cultured Mammalian Cells 5892

FIECCHI, ALBERTO, MARZIA GALLI KIENLE, ANTONIO SCALA, GIOVANNI GALLI, RODOLFO PAOLETTI, AND ENRICA GROSSI PAOLETTI. Studies on the Enzymatic Conversion of Oxygen-substituted Sterols to Cholesterol 5898

SUCHY, JAN, JOHN J. MIEYAL, GRETCHEN BANTLE, AND HENRY Z. SABLE. Coenzyme Interactions. VI. Properties of the Pyrimidine Moiety of Thiamine 5905

GALLO, ANTHONY A., INGER L. HANSEN, HENRY Z. SABLE, AND TERRENCE J. SWIFT. Coenzyme Interactions. VII. Proton Magnetic Resonance Studies of Complexes of Thiamine Pyrophosphate with Divalent Cations 5913

POLLET, ROBERT, GUIDO ROSSI, AND HAROLD EDELHOCH. Fluorescence and Circular Dichroism of Bence-Jones Proteins at High Temperature 5921

TAYLOR, JOHN M., WILLIAM M. MITCHELL, AND STANLEY COHEN. Epidermal Growth Factor. Physical and Chemical Properties 5928

GARRARD, WILLIAM T. Synthesis, Assembly, and Localization of Periplasmic Cytochrome *c* 5935

DAWSON, GLYN, REUBEN MATALON, AND ALBERT DORFMAN. Glycosphingolipids in Cultured Human Skin Fibroblasts. I. Characterization and Metabolism in Normal Fibroblasts 5944

DAWSON, GLYN, REUBEN MATALON, AND ALBERT DORFMAN. Glycosphingolipids in Cultured Human Skin Fibroblasts. II. Characterization and Metabolism in Fibroblasts from Patients with Inborn Errors of Glycosphingolipid and Mucopolysaccharide Metabolism 5951

KLIPPENSTEIN, GERALD L., DEE A. VAN RIPER, AND ELIZABETH A. OOSTEROM. A Comparative Study of the Oxygen Transport Proteins of *Dendrostomum pyroides*. Isolation and Characterization of Hemerythrins from Muscle, the Vascular System, and the Coelom 5959

GILL, D. MICHAEL. Poly(adenosine diphosphate ribose) Synthesis in Soluble Extracts of Animal Organs 5964

NAKATSUKASA, WALTER M., AND EUGENE W. NESTER. Regulation of Aromatic Amino Acid Biosynthesis in *Bacillus subtilis* 168. I. Evidence for and Characterization of a Trifunctional Enzyme Complex 5972

ATASSI, M. Z., AND R. P. SINGHAL. Conformational Studies on Modified Proteins and Peptides. V. Conformation of Myoglobin Derivatives Modified at Two Carboxyl Groups 5980

ZIEVE, FRANKLIN J. Inhibition of Rat Liver Ribonucleic Acid Polymerase by the Carcinogen *N*-Hydroxy-2-fluorenylacetamide 5987

ZALKIN, HOWARD, AND SHU HSIA CHEN. Anthranilate Synthetase from *Serratia marcescens*. On the Mechanism of Tryptophan Inhibition 5996

COMMUNICATIONS

WALSH, CHRISTOPHER T., AGNES SCHONBRUNN, OKSANA LOCKRIDGE, VINCENT MASSEY, AND ROBERT H. ABELES. Inactivation of a Flavoprotein, Lactate Oxidase, by an Acetylenic Substrate 6004

CHLEBOWSKI, JAN F., AND JOSEPH E. COLEMAN. Presteady State Kinetics of Phosphorothioate Hydrolysis by Alkaline Phosphatase. Rate-limiting Dephosphorylation at Alkaline pH 6007

CORRECTION

MYERS, GERALD, HEINZ ULRICH BLANK, AND DIETER SÖLL. A Comparative Study of the Interactions of *Escherichia coli* Leucyl-, Seryl-, and Valyl-Transfer Ribonucleic Acid Synthetases with Their Cognate Transfer Ribonucleic Acids. **Vol. 246, 4955–4964 (1971)** 6011

coli. Purification and Properties of the Enzyme 5675

HOWLETT, GEOFFREY J., AND LAWRENCE W. NICHOL. Computer Simulation of Sedimentation Equilibrium Distributions for Systems Involving Heterogeneous Associations. The Interaction of *N*-Acetylglucosamine with Lysozyme 5681

MACQUARRIE, RON, AND QUENTIN H. GIBSON. Ligand Binding and Release of an Analogue of 2,3-Diphosphoglycerate from Human Hemoglobin 5686

FINN, FRANCES M., CHRISTOPHER C. WIDNELL, AND KLAUS HOFMANN. Localization of an Adrenocorticotropic Hormone Receptor on Bovine Adrenal Cortical Membranes 5695

NAKAGAWA, YASUSHI, SYLVIA CAPETILLO, AND BRUNO JIRGENSONS. Effect of Chemical Modification of Lysine Residues on the Conformation of Human Immunoglobulin G 5703

SEAMAN, EDNA, HELEN VAN VUNAKIS, AND LAWRENCE LEVINE. Serologic Estimation of Thymine Dimers in the Deoxyribonucleic Acid of Bacterial and Mammalian Cells following Irradiation with Ultraviolet Light and Postirradiation Repair 5709

BUSTIN, MICHAEL, AND B. DAVID STOLLAR. Immunochemical Specificity in Lysine-rich Histone Subfractions 5716

TIEMEIER, DAVID C., AND GREGORY MILMAN. Regulation of Glutamine Synthetase in Cultured Chinese Hamster Cells. Induction and Repression by Glutamine 5722

WONG, RICHARD G., JAMES F. MYRTLE, HUAN C. TSAI, AND ANTHONY W. NORMAN. Studies on Calciferol Metabolism. V. The Occurrence and Biological Activity of 1,25-Dihydroxy-vitamin D_3 in Bone 5728

SCHEFFLER, IMMO E., AND CHARLES C. RICHARDSON. Chemical and Enzymatic Studies of Deoxyribonucleic Acid Covalently Linked to Ficoll 5736

KÉZDY, FERENC J., SATYA P. JINDAL, AND MYRON L. BENDER. The α-Chymotrypsin-catalyzed Hydrolysis of Esters of α-Amino Acids 5746

LEE, YUAN CHUAN, AND JANE R. SCOCCA. A Common Structural Unit in Asparagine-Oligosaccharides of Several Glycoproteins from Different Sources 5753

GOGGINS, JOHN F., GEORGE S. JOHNSON, AND IRA PASTAN.

The Effect of Dibutyryl Cyclic Adenosine Monophosphate on Synthesis of Sulfated Acid Mucopolysaccharides by Transformed Fibroblasts 5759
RENNER, EDWARD D., PETER G. W. PLAGEMANN, AND ROBERT W. BERNLOHR. Permeation of Glucose by Simple and Facilitated Diffusion by Novikoff Rat Hepatoma Cells in Suspension Culture and Its Relationship to Glucose Metabolism 5765
TYSON, CHARLES A., JOHN D. LIPSCOMB, AND I. C. GUNSALUS. The Roles of Putidaredoxin and $P450_{cam}$ in Methylene Hydroxylation 5777
WOHL, ROBERT C., AND GABOR MARKUS. Phosphoenolpyruvate Carboxylase of *Escherichia coli*. Purification and Some Properties 5785

October 10, 1972

BRODY, STUART. Regulation of Pyridine Nucleotide Levels and Ratios in *Neurospora crassa* 6013
YEOMAN, LYNN C., MARK O. J. OLSON, NOBUHIKO SUGANO, JOHN J. JORDAN, CHARLES W. TAYLOR, WESLEY C. STARBUCK, AND HARRIS BUSCH. Amino Acid Sequence of the Center of the Arginine-Lysine-rich Histone from Calf Thymus. The Total Sequence. 6018
WILLIAMS, KEITH L., ELIZABETH SMITH, DENIS C. SHAW, AND L. MICHAEL BIRT. Studies of the Levels and Synthesis of Cytochrome *c* during Adult Development of the Blowfly *Lucilia cuprina* 6024
MOSES, ROBB E. Replicative Deoxyribonucleic Acid Synthesis in a System Diffusible for Macromolecules. 6031
GILLEN, ROBERT G., AND AUSTEN RIGGS. Structure and Function of the Hemoglobins of the Carp, *Cyprinus carpio* 6039
ROGNSTAD, ROBERT, AND JOSEPH KATZ. Gluconeogenesis in the Kidney Cortex. Quantitative Estimation of Carbon Flow 6047
GALLANT, JONATHAN, GARY MARGASON, AND BETSY FINCH. On the Turnover of ppGpp in *Escherichia coli* 6055
MANSOUR, TAG E. Phosphofructokinase Activity in Skeletal Muscle Extracts following Administration of Epinephrine 6059
GONZALEZ, ANA MARIA, FRESIA GONZALEZ, SIGHART GOLF, AND FRANK MARCUS. Fish Liver Fructose 1,6-Diphosphatase. I. Purification of the Enzyme from *Genypterus chilensis* and Studies on Adenosine 5′-Monophosphate Inhibition 6067
HINZ, HANS-JÜRGEN, AND JULIAN M. STURTEVANT. Calorimetric Studies of Delute Aqueous Suspensions of Bilayers Formed from Synthetic L-α-Lecithins 6071
BRUNORI, MAURIZIO, MICHAEL T. WILSON, AND ERALDO ANTONINI. Properties of Modified Cytochromes. I. Equilibrium and Kinetics of the pH-dependent Transition in Carboxymethylated Horse Heart Cytochrome *c* 6076
CRAINE, JONATHAN E., E. STANLEY HALL, AND SEYMOUR KAUFMAN. The Isolation and Characterization of Dihydropteridine Reductase from Sheep Liver 6082
SUGITA, YOSHIKI, SHIRO BANNAI, YOSHIMASA YONEYAMA, AND TAKAO NAKAMURA. Nonequivalence of the α and β Chains in the Oxygen Dissociation from Hybrid-Heme Hemoglobin 6092
NELSESTUEN, GARY L., AND JOHN W. SUTTIE. The Carbohydrate of Bovine Prothrombin. Partial Structural Determination Demonstrating the Presence of α-Galactose Residues 6096
SCHLEYER, HEINZ, DAVID Y. COOPER, AND OTTO ROSENTHAL. Preparation of the Heme Protein P-450 from the Adrenal Cortex and Some of Its Properties 6103
BAIG, M. MANSOUR, AND DAVID AMINOFF. Glycoproteins and Blood Group Activity. I. Oligosaccharides of Serologically Inactive Hog Submaxillary Glycoproteins 6111
PINKUS, LAWRENCE M., AND ALTON MEISTER. Identification of a Reactive Cysteine Residue at the Glutamine Binding Site of Carbamyl Phosphate Synthetase 6119
BANKEL, LOUISE, GÖRAN LINDSTEDT, AND SVEN LINDSTEDT. Thymidine 2′-Hydroxylation in *Neurospora crassa* 6128
RUBIN, CHARLES S., JACK ERLICHMAN, AND ORA M. ROSEN. Cyclic Adenosine 3′,5′-Monophosphate-dependent Protein Kinase of Human Erythrocyte Membranes 6135
VAN DE SANDE, JOHAN H., PETER C. LOEWEN, AND H. GOBIND KHORANA. Studies on Polynucleotides. CXVIII. A Further Study of Ribonucleotide Incorporation into Deoxyribonucleic Acid Chains by Deoxyribonucleic Acid Polymerase I of *Escherichia coli* 6140
KLEPPE, RUTH, AND H. GOBIND KHORANA. Studies on Polynucleotides. CXIX. Transcription of Short Double-stranded Deoxyribonucleic Acids of Defined Nucleotide Sequences 6149
TERAO, TADAO, JAMES E. DAHLBERG, AND H. GOBIND KHORANA. Studies on Polynucleotides. CXX. On the Transcription of a Synthetic 29-Unit Long Deoxyribopolynucleotide 6157
CAMPBELL, BENEDICT J., GERALD WOODWARD, AND VICTORIA BORBERG. Calcium-mediated Interactions between the Antidiuretic Hormone and Renal Plasma Membranes 6167
LAUTENBERGER, JAMES H., AND STUART LINN. The Deoxyribonucleic Acid Modification and Restriction Enzymes of *Escherichia coli* B. I. Purification, Subunit Structure, and Catalytic Properties of the Modification Methylase 6176
ESKIN, BARNET, AND STUART LINN. The Deoxyribonucleic Acid Modification and Restriction Enzymes of *Escherichia coli* B. II. Purification, Subunit Structure, and Catalytic Properties of the Restriction Endonuclease 6183
ESKIN, BARNET, AND STUART LINN. The Deoxyribonucleic Acid Modification and Restriction Enzymes of *Escherichia coli* B. III. Studies of the Restriction Adenosine Triphosphatase 6192
GELEHRTER, THOMAS D., JANET R. EMANUEL, AND CAROLYN J. SPENCER. Induction of Tyrosine Aminotransferase by Dexamethasone, Insulin, and Serum. Characterization of the Induced Enzyme 6197
REEVES, JOHN P., FRANK J. LOMBARDI, AND H. RONALD KABACK. Mechanisms of Active Transport in Isolated Bacterial Membrane Vesicles. VII. Fluorescence of 1-Anilino-8-naphthalenesulfonate during D-Lactate Oxidation by Membrane Vesicles from *Escherichia coli* 6204
EGELRUD, TORBJÖRN, AND THOMAS OLIVECRONA. The Purification of a Lipoprotein Lypase from Bovine Skim Milk 6212
CZECH, MICHAEL P., AND JOHN N. FAIN. Cu^{++}-dependent Thiol Stimulation of Glucose Metabolism in White Fat Cells 6218
HANCOCK, WILLIAM S., DAVID J. PRESCOTT, GARLAND R. MARSHALL, AND P. ROY VAGELOS. Acyl Carrier Protein. XVIII. Chemical Synthesis and Characterization of a Protein with Acyl Carrier Protein Activity 6224
RONCARI, DANIEL A. K., RALPH A. BRADSAHW, AND P. ROY VAGELOS. Acyl Carrier Protein. XIX. Amino Acid Sequence of Liver Fatty Acid Synthetase Peptides Containing 4′-Phosphopanthetheine 6234
MALHOTRA, HARISH C., AND WILLIAM R. NES. The Conversion of Mevalonate to 24-Methylenecycloartanol by a Cell-free Enzyme Preparation from Nonphotosynthetic Tissue 6243
MURAKAMI, KENJI, THERESA MITCHELL, AND JONATHAN S. NISHIMURA. Nucleotide Specificity of *Escherichia coli* Succinic Thiokinase. Succinyl Coenzyme A-stimulated Nucleoside Diphosphate Kinase Activity of the Enzyme 6247
TSAI, SU-CHEN, AND MARTHA VAUGHAN. Inactivation of Hormone-sensitive Lipase in Extracts of Adipose Tissue 6253
INGRAHAM, JOHN L., AND JAN NEUHARD. Cold-sensitive Mutants of *Salmonella typhimurium* Defective in Uridine Monophosphate Kinase (*pyrH*) 6259
YAMADA, RYO-HEI, AND HARRY P. C. HOGENKAMP. The Synthesis of a 5′-Deoxyadenosylcobalamin-agarose Adsorbent and Its Utility in the Purification of Ribonucleotide Reductase 6266
HOCHREITER, MARGARET C., DAVID R. PATEK, AND KARL A. SCHELLENBERG. Catalysis of α-Imino-Glutarate Formation from α-Ketoglutarate and Ammonia by Bovine Glutamate Dehydrogenase 6271
STALLCUP, WILLIAM B., STEPHEN C. MOCKRIN, AND D. E.

KOSHLAND, JR. A Rapid Purification Procedure for Glyceraldehyde 3-Phosphate Dehydrogenase from Bakers' Yeast 6277
MILSTIEN, SHELDON, AND PETER GOLDMAN. Metabolism of Guanidinosuccinic Acid. I. Characterization of a Specific Amidino Hydrolase from a *Pseudomonas chlororaphis* 6280
GREEN, N. MICHAEL, ROBIN C. VALENTINE, NICHOLAS G. WRIGLEY, FAZAL AHMAD, BIRGIT JACOBSON, AND HARLAND G. WOOD. Transcarboxylase. XI. Electron Microscopy and Subunit Structure 6284
AHMAD, FAZAL, DAVID G. LYGRE, BIRGIT E. JACOBSON, AND HARLAND G. WOOD. Transcarboxylase. XII. Identification of the Metal-containing Subunits of Transcarboxylase and Stability of the Binding 6299
KAMIRYO, TATSUYUKI, AND MICHIO MATSUHASHI. The Biosynthesis of the Cross-linking Peptides in the Cell Wall Peptidoglycan of *Staphylococcus aureus* ... 6306
ARAKI, YOSHIO, TOKUJI NAKATANI, KOJI NAKAYAMA, AND EIJI ITO. Occurrence of *N*-Nonsubstituted Glucosamine Residues in Peptidoglycan of Lysozyme-resistant Cell Walls from *Bacillus cereus* 6312
LO, THEODORE C. Y., M. KHALIL RAYMAN, AND BISHNU D. SANWAL. Transport of Succinate in *Escherichia coli*. I. Biochemical and Genetic Studies of Transport in Whole Cells 6323
RAYMAN, M. KHALIL, THEODORE C. Y. LO, AND BISHNU D. SANWAL. Transport of Succinate in *Escherichi coli*. II. Characteristics of Uptake and Energy Coupling with Transport in Membrane Preparations 6332
SCHREIBER, GERHARD, AND MARGOT SCHREIBER. Protein Synthesis in Single Cell Suspensions from Rat Liver. I. General Properties of the System and Permeability of the Cells for Leucine and Methionine 6340
LLOYD-JONES, JOHN G., PETER HEIDEL, BORIS YAGEN, PHILLIP J. DOYLE, G. H. FRIEDELL, AND ELIAHU CASPI. The Role of L-[*methyl*-^{3}H, ^{14}C]Methionine in the Biosynthesis of Polyprenoids. I. The Incorporation of L-[*methyl*-^{3}H, ^{14}C]Methionine in Cholesterol and 5α-Cholest-7-en-3β-ol *in Vivo* in the Rat 6347
KOLODNER, RICHARD, AND K. K. TEWARI. Molecular Size and Conformation of Chloroplast Deoxyribonucleic Acid from Pea Leaves 6355

COMMUNICATIONS

FAKUNDING, JOHN L., JOLINDA A. TRAUGH, ROBERT R. TRAUT, AND JOHN W. B. HERSHEY. Phosphorylation of Initiation Factor IF-2 from *Escherichia coli* with Skeletal Muscle Kinase 6365
RICHARDSON, DAVID C., C. JAMES BIER, AND JANE S. RICHARDSON. Two Crystal Forms of Bovine Superoxide Dismutase 6368
MODRICH, PAUL, I. R. LEHMAN, AND JAMES C. WANG. Enzymatic Joining of Polynucleotides. XI. Reversal of the *Escherichia coli* Deoxyribonucleic Acid Ligase Reaction 6370

CORRECTION

KILLICK, KATHLEEN A., AND BARBARA E. WRIGHT. Trehalose Synthesis during Differentiation in *Dictyostelium discoidum*. III. *In Vitro* Unmasking of Trehalose 6-Phosphate Synthetase. **Vol. 247 (1972) 2967–2969** 6373

October 25, 1972

CUMULATIVE AUTHOR INDEX. NUMBERS 1 THROUGH 20 iii
KUBOYAMA, MORIO, FOOK CHOY YONG, AND TSOO E. KING. Studies on Cytochrome Oxidase. VIII. Preparation and Some Properties of Cardiac Cytochrome Oxidase 6375
YONG, FOOK CHOY, AND TSOO E. KING. Studies on Cytochrome Oxidase. IX. Heme-Copper Interaction 6384
MORLEY, NINA, AND ARNIS KUKSIS. Positional Specificity of Lipoprotein Lipase 6389
POWERS, DONALD M., AND ALAN PETERKOFSKY. The Presence of *N*-(Purin-6-ylcarbamoyl)threonine in Transfer Ribonucleic Acid Species Whose Codons Begin with Adenine 6394
POSNER, BARRY I., AND MARTIN FLAVIN. Cystathionine γ-Synthase. Studies of Hydrogen Exchange Reactions 6402
POSNER, BARRY I., AND MARTIN FLAVIN. Cystathionine γ-Synthase. The Nature of Intramolecular Proton Shifts in the γ Elimination Reaction 6412
EASTON, THOMAS G., AND E. REICH. Muscle Differentiation in Cell Culture. Effects of Nucleoside Inhibitors and Rous Sarcoma Virus 6420
RIFKIN, DANIEL B., RICHARD W. COMPANS, AND E. REICH. A Specific Labeling Procedure for Proteins on the Outer Surface of Membranes 6432
TACK, BRIAN F., PETER J. CHAPMAN, AND STANLEY DAGLEY. Metabolism of Gallic Acid and Syringic Acid by *Pseudomonas putida* 6438
TACK, BRIAN F., PETER J. CHAPMAN, AND STANLEY DAGLEY. Purification and Properties of 4-Hydroxy-4-methyl-2-oxoglutarate Aldolase 6444
PALMITER, RICHARD D. Regulation of Protein Synthesis in Chick Oviduct. I. Independent Regulation of Ovalbumin, Conalbumin, Ovomucoid, and Lysozyme Induction 6450
PALMITER, RICHARD D., AND GEORGE A. GUTMAN. Appendix. Fluorescent Antibody Localization of Ovalbumin, Conalbumin, Ovomucoid, and Lysozyme in Chick Oviduct Magnum 6459
NAKAMURA, SATOSHI, AND TOKUJI KIMURA. Studies on Aggregated Multienzyme Systems. Stimulation of Oxygen Uptake of Ferredoxin-Nicotinamide Adenine Dinucleotide Phosphate Reductase-Ferredoxin Complex by Cytochrome *c* 6462
TRELSTAD, ROBERT L., ANDREW H. KANG, BRYAN P. TOOLE, AND JEROME GROSS. Collagen Heterogeneity. High Resolution Separation of Native [α1(I)]$_2\alpha$2 and [α1(II)]$_3$ and their Component α Chains 6469
WOODSIDE, KENNETH H., AND GLENN E. MORTIMORE. Suppression of Protein Turnover by Amino Acids in the Perfused Rat Liver 6474
GRIFFIN, JOHN H., JURG P. ROSENBUSCH, KLAUS K. WEBER, AND ELKAN R. BLOUT. Conformational Changes in Aspartate Transcarbamylase. I. Studies of Ligand Binding and of Subunit Interactions by Circular Dichroism Spectroscopy 6482
GOSPODAROWICZ, DENIS. Single Step Purification of Ovine Luteinizing Hormone by Affinity Chromatography 6491
SAWYER, THOMAS H., BILL E. TILLEY, AND ROBERT W. GRACY. Studies on Human Triosephosphate Isomerase. II. Nature of the Electrophoretic Multiplicity in Erythrocytes 6499
NELSON, NATHAN, HANNAH NELSON, AND EFRAIM RACKER. Partial Resolution of the Enzymes Catalyzing Photophosphorylation. XI. Magnesium-Adenosine Triphosphatase Properties of Heat-activated Coupling Factor 1 from Chloroplasts 6506
TZAGOLOFF, ALEXANDER, ANNA AKAI, AND MARCELINO F. SIERRA. Assembly of the Mitochondrial Membrane System. VII. Synthesis and Integration of F_1 Subunits into the Rutamycin-sensitive Adenosine Triphosphatase 6511
TZAGOLOFF, ALEXANDER, AND ANNA AKAI. Assembly of the Mitochondrial Membrane System. VIII. Properties of the Products of Mitochondrial Protein Synthesis in Yeast 6517
KONISKY, JORDAN, AND BILLIE S. COWELL. Interaction of Colicin Ia with Bacterial Cells. Direct Measurement of Ia-Receptor Interaction 6524
POST, ROBERT L., CSABA HEGYVARY, AND SHOJI KUME. Activation by Adenosine Triphosphate in the Phosphorylation Kinetics of Sodium and Potassium Ion Transport Adenosine Triphosphatase 6530
GILBERT, JEFFREY M. Evidence for Protein Synthesis in Synaptosomal Membranes 6541
BLATT, LOIS M., PATRICK H. MCVERRY, AND KI-HAN KIM. Regulation of Hepatic Glycogen Synthetase of *Rana catesbeiana*. Inhibition of the Action of Insulin by Ouabain 6551
MORGAN, WILLIAM T., CURTIS P. HENSLEY, JR., AND JOHN P. RIEHM. Proteins of the Thermophilic Fungus *Humicola lanuginosa*. I. Isolation and Amino Acid Sequence of a Cytochrome *c* 6555
KESSLER, DALE L., AND K. V. RAJAGOPALAN. Purification and Properties of Sulfite Oxidase from Chicken

Liver. Presence of Molybdenum in Sulfite Oxidase from Diverse Sources 6566
SCHUTZBACH, JOHN S., AND HELMUT ANKEL. Xylosyltransferases in *Cryptococcus laurentii* 6574
CHADER, GERALD J., NANCY RUST, ROBERT M. BURTON, AND ULRICH WESTPHAL. Steroid-Protein Interactions. XXVI. Studies on the Polymeric Nature of the Corticosteroid-binding Globulin of the Rabbit .. 6581
HENEINE, IBRAHIM F., AND JOE R. KIMMEL. The Sulfhydryl Groups of Papaya Lysozyme and Their Relation to Biological Activity 6589
CHENG, SHIRLEY, AND MARINO MARTINEZ-CARRION. The Active Center of Aspartate Transaminase. A Fluorine-19 Nuclear Magnetic Resonance Study of the Anion Binding Site 6597
GUSSECK, DAVID J., AND JERRY L. HEDRICK. The Enzymatic Characteristics and the Control of Glycogen Phosphorylase during Early Amphibian Development 6603
IVERIUS, PER-HENRIK, ULF LINDAHL, TORBJÖRN EGELRUD, AND THOMAS OLIVECRONA. Effects of Heparin on Lipoprotein Lipase from Bovine Milk ... 6610
KNOWLES, AILEEN F., AND HARVEY S. PENEFSKY. The Subunit Structure of Beef Heart Mitochondrial Adenosine Triphosphatase. Isolation Procedures 6617
KNOWLES, AILEEN F., AND HARVEY S. PENEFSKY. The Subunit Structure of Beef Heart Mitochondrial Adenosine Triphosphatase. Physical and Chemical Properties of Isolated Subunits 6624
TEDESCO, THOMAS A. Human Galactose 1-Phosphate Uridyltransferase. Purification, Antibody Production, and Comparison of the Wild Type, Duarte Variant, and Galactosemic Gene Products 6631
ASHBY, C. DENNIS, AND DONAL A. WALSH. Characterization of the Interaction of a Protein Inhibitor with Adenosine 3′,5′-Monophosphate-dependent Protein Kinases. I. Interaction with the Catalytic Subunit of the Protein Kinase 6637
MENDICINO, JOSEPH, ROBERT M. OLIVER, AND NANCY KRATOWICH. Role of Enzyme-Enzyme Interactions in the Regulation of Gluconeogenesis. Properties and Subunit Structure of Fructose 1,6-Diphosphatase from Swine Kidney 6643
GOLDEN, NORMA G., AND GARY L. POWELL. Stringent and Relaxed Control of Phospholipid Metabolism in *Escherichia coli* 6651
LITT, MICHAEL, AND DAVID KABAT. Studies of Transfer Ribonucleic Acids and of Hemoglobin Synthesis in Sheep Reticulocytes 6659
BALDY, MARIAN, PAULINE GASKILL, AND DAVID KABAT. Expression of the Silent Hemoglobin Gene in Sheep. Studies of the Globin Messenger Ribonucleic Acids .. 6665
BRUNI, CARMELO B., ROBERT G. MARTIN, AND MATTHEW M. RECHLER. COOH-terminal Amino Acid Sequence of Histidinol Dehydrogenase from a *Salmonella typhimurium* Mutant 6671
BAUER, EUGENE A., ARTHUR Z. EISEN, AND JOHN J. JEFFREY. Radioimmunoassay of Human Collagenase. I. Specificity of the Assay and Quantitative Determination of *in Vivo* and *in Vitro* Human Skin Collagenase 6679
POWERS, DENNIS A., AND ALLEN B. EDMUNDSON. Multiple Hemoglobins of Catostomid Fish. I. Isolation and Characterization of the Isohemoglobins from *Catostomus clarkii* 6686
POWERS, DENNIS A., AND ALLEN B. EDMUNDSON. Multiple Hemoglobins of Catostomid Fish. II. The Amino Acid Sequence of the Major α Chain from *Catostomus clarkii* Hemoglobins 6694
HOROWITZ, BERNARD, AND ALTON MEISTER. Glutamine-dependent Aspargine Synthetase from Leukemia Cells. Chloride Dependence, Mechanism of Action, and Inhibition 6708
DRAPEAU, GABRIEL R., YVES BOILY, AND JEAN HOUMARD. Purification and Properties of an Extracellular Protease of *Staphylococcus aureus* 6720

COMMUNICATIONS

COLMAN, ROBERTA F. Substrate Independence of Molecular Weight of Triphosphopyridine Nucleotide-specific Isocitrate Dehydrogenase 6727
QURESHI, ASAF A., FRANCIS J. BARNES, AND JOHN W. PORTER. Lycopersene and Prelycopersene Pyrophosphate. Intermediates in Carotene Biosynthesis .. 6730
HOWARD, FRANK B., JOE FRAZIER, AND H. TODD MILES. Formation of Polynucleotide Helices Having Purine Nucleotide Residues in a *Syn* Configuration 6733

CORRECTION

WEISBLAT, DAVID A., AND BERNARD M. BABIOR. The Mechanism of Action of Ethanolamine Ammonia-Lyase, a B_{12}-dependent Enzyme. VIII. Further Studies with Compounds Labeled with Isotopes of Hydrocarbon: Identification and Some Properties of the Rate-limiting Step. **Vol. 246, 6064–6071 (1971)** ... 6736

November 10, 1972

HUANG, CHIN C., AND DAVID AMINOFF. Enzymes That Destroy Blood Group Specificity. V. The Oligosaccharase of *Clostridium perfringens* 6737
CHAIKEN, IRWIN M., AND GUILLERMO R. SÁNCHEZ. Active Site Properties of [Aspartic acid 43]-Semisynthetic nuclease-T′ 6743
GONZALEZ-PORQUE, PEDRO, AND JACK L. STROMINGER. Enzymatic Synthesis of Cytidine Diphosphate 3,6-Dideoxyhexoses. VI. Purification to Homogeneity and Some Properties of Cytidine Diphosphate-D-glucose Oxidoreductase, Enzyme E_1, and Enzyme E_2 6748
ROBBINS, KENNETH C., PRISCILLA BERNABE, LEONIDA ARZADON, AND LOUIS SUMMARIA. The Primary Structure of Human Plasminogen. I. The NH_2-Terminal Sequences of Human Plasminogen and the *S*-Carboxymethyl Heavy (A) and Light (B) Chain Derivatives of Plasmin 6757
PFEIFER, PETER M., AND PAUL B. MCCAY. Reduced Triphosphopyridine Nucleotide Oxidase-catalyzed Alterations of Membrane Phospholipids. VI. Structural Changes in Mitochondria Associated with Inactivation of Electron Transport Activity 6763
PALMITER, RICHARD D. Regulation of Protein Synthesis in Chick Oviduct. II. Modulation of Polypeptide Elongation and Initiation Rates by Estrogen and Progesterone 6770
SUZUE, GINZABURO, AND YVES L. MARCEL. Kinetic Studies on the Chain Length Specificity of Long Chain Acyl Coenzyme A Synthetase from Rat Liver Microsomes 6781
SLATER, JOHN P., ILANA TAMIR, LAWRENCE A. LOEB, AND ALBERT S. MILDVAN. The Mechanism of *Escherichia coli* Deoxyribonucleic Acid Polymerase. I. Magnetic Resonance and Kinetic Studies of the Role of Metals 6784
DATTA, ALOK K., AND DEBI P. BURMA. Association of Ribonuclease I with Ribosomes and Their Subunits .. 6795
MIDDLEDITCH, LESLEY E., ROBERT W. ATCHISON, AND ALBERT E. CHUNG. Pyridine Nucleotide Transhydrogenase from *Azotobacter vinelandii*. Some Aspects of Its Structure 6802
HAMEL, ERNEST, AND TOKUMASA NAKAMOTO. Studies on the Role of an *Escherichia coli* 50 S Ribosomal Component in Polypeptide Chain Elongation 6810
WHITING, MALCOLM J., AND W. H. ELLIOTT. Purification and Properties of Solubilized Mitochondrial δ-Aminolevulinic Acid Synthetase and Comparison with the Cytosol Enzyme 6818
BARENHOLZ, YECHEZKEL, AND SHIMON GATT. Long Chain Base-Acetyl Coenzyme A Acetyltransferase from the Microsomes of *Hansenula ciferri*. I. Isolation and Properties 6827
BARENHOLZ, YECHEZKEL, AND SHIMON GATT. Long Chain Base-Acetyl Coenzyme A Acetyltransferase from the microsomes of *Hansenula ciferri*. II. Kinetic Properties 6834
LEIBOVITZ-BENGERSHON, ZELINA, ILANA KOBILER, AND SHIMON GATT. Lysophospholipases of Rat Brain .. 6840
KOMINAMI, EIKI, KEIKO KOBAYASHI, SACHIKO KOMINAMI, AND NOBUHIKO KATUNUMA. Properties of a Specific Protease for Pyridoxal Enzymes and Its Biological

Role ... 6848

SAMUEL, CHARLES E., CHERYL L. MURRAY, AND JESSE C. RABINOWITZ. Methionine Transfer Ribonucleic Acid from Folate-sufficient and Folate-deficient *Streptococcus faecalis* R ... 6856

FAIN, JOHN N., RICHARD H. POINTER, AND WALTER F. WARD. Effects of Adenosine Nucleosides on Adenylate Cyclase, Phosphodiesterase, Cyclic Adenosine Monophosphate Accumulation, and Lipolysis in Fat Cells ... 6866

FLAWIÁ, MIRTHA M., AND HÉCTOR N. TORRES. Adenylate Cyclase Activity in *Neurospora crassa*. I. General Properties ... 6873

FLAWIÁ, MIRTHA M., AND HÉCTOR N. TORRES. Adenylate Cyclase Activity in *Neurospora crassa*. II. Kinetics ... 6880

MONROY, GLADYS, F. HELIO ROLA, AND MAYNARD E. PULLMAN. A Substrate- and Position-specific Acylation of *sn*-Glycerol 3-Phosphate by Rat Liver Mitochondria ... 6884

PESTKA, SIDNEY, HENRY ROSENFELD, RAYMOND HARRIS, AND HENRY HINTIKKA. Studies on Transfer Ribonucleic Acid—Ribosome Complexes. XXI. Effect of Antibiotics on Peptidyl-Puromycin Synthesis by Mammalian Polyribosomes ... 6895

LESSARD, JAMES L., AND SIDNEY PESTKA. Studies on the Formation of Transfer Ribonucleic Acid-Ribosome Complexes. XXII. Binding of Aminoacyl-Oligonucleotides to Ribosomes ... 6901

LESSARD, JAMES L., AND SIDNEY PESTKA. Studies on the Formation of Transfer Ribonucleic Acid-Ribosome Complexes. XXIII. Chloramphenicol, Aminoacyl-Oligonucleotides, and *Escherichia coli* Ribosomes ... 6909

MARX, STEPHEN J., SUSAN A. FEDAK, AND G. D. AURBACH. Preparation and Characterization of a Hormone-responsive Renal Plasma Membrane Fraction ... 6913

GOLDFINE, IRA D., JERRY D. GARDNER, AND DAVID M. NEVILLE, JR. Insulin Action in Isolated Rat Thymocytes. I. Binding of ^{125}I-Insulin and Stimulation of α-Aminoisobutyric Acid Transport ... 6919

GOLDFINE, IRA D., AND PETER SHERLINE. Insulin Action in Isolated Rat Thymocytes. II. Independence of Insulin and Cyclic Adenosine Monophosphate ... 6927

SUTIN, NORMAN, AND JOHN K. YANDELL. Mechanisms of the Reactions of Cytochrome *c*. Rate and Equilibrium Constants for Ligand Binding to Horse Heart Ferricytochrome *c* ... 6932

PRESANT, CARY A., AND STUART KORNFELD. Characterization of the Cell Surface Receptor for the *Agaricus bisporus* Hemagglutinin ... 6937

GOODRIDGE, ALAN G. Regulation of the Activity of Acetyl Coenzyme A Carboxylase by Palmitoyl Coenzyme A and Citrate ... 6946

CHURCHICH, JORGE E. Fluorescence Changes Induced by Binding of 4-Pyridoxic Acid 5′-Phosphate to Proteins ... 6953

MISRA, HARA P., AND IRWIN FRIDOVICH. The Generation of Superoxide Radical during the Autoxidation of Hemoglobin ... 6960

GEHRING, ULRICH, AND DANIEL I. ARNON. Purification and Properties of α-Ketoglutarate Synthase from a Photosynthetic Bacterium ... 6963

REED, PETER W., AND HENRY A. LARDY. A23187: A Divalent Cation Ionophore ... 6970

MIZUSAWA, KIYOSHI, AND FUMIHIKO YOSHIDA. Thermophilic *Streptomyces* Alkaline Proteinase. I. Isolation, Crystallization, and Physicochemical Properties ... 6978

SALHANY, J. MITCHELL, DANIEL H. MATHERS, AND ROBERT S. ELIOT. The Deoxygenation Kinetics of Hemoglobin Partially Saturated with Carbon Monoxide. Effect of 2,3-Diphosphoglycerate ... 6985

JOHNSON, RONALD C., AND JOHN R. GILBERTSON. Isolation, Characterization, and Partial Purification of a Fatty Acyl Coenzyme A Reductase from Bovine Cardiac Muscle ... 6991

AVRAMOVIC-ŽIKIC, OLGA, AND NEIL B. MADSEN. Paradoxical Inhibition of Phosphorylase by Pyridoxal Phosphate. I. Studies on the Reaction of Pyridoxal Phosphate with a Specific Lysine Residue of Phosphorylase *b* ... 6999

AVRAMOVIC-ZIKIC, OLGA, AND NEIL B. MADSEN. Paradoxical Inhibition of Phosphorylase by Pyridoxal Phosphate. II. Characterization of the Pyridoxal Phosphate-Phosphorylase Derivative ... 7005

LUSTY, C. J., AND S. RATNER. Biosynthesis of Urea. XIV. The Quaternary Structure of Argininosuccinase ... 7010

ROBINSON, ELIZABETH A., AND ELIZABETH S. MAXWELL. Chemical Properties of Elongation Factor 2. Amino Acid Composition, NH_2-terminal Residue, and Sulfhydryl Reactivity ... 7023

ARAI, KEN-ICHI, MASAO KAWAKITA, AND YOSHITO KAZIRO. Studies on Polypeptide Elongation Factors from *Escherichia coli*. II. Purification of Factors Tu-Guanosine Diphosphate, Ts, and Tu-Ts and Crystallization of Tu-Guanosine Diphosphate and Tu-Ts ... 7029

ASHBROOK, J. DOUGLAS, ARTHUR A. SPECTOR, AND JOHN E. FLETCHER. Medium Chain Fatty Acid Binding to Human Plasma Albumin ... 7038

HARTZ, JOHN W., AND HAROLD F. DEUTSCH. Subunit Structure of Human Superoxide Dismutase ... 7043

FREEDMAN, MURRAY H., ROBERT B. GUYER, AND WILLIAM D. TERRY. Isolation and Characterization of Electrophoretically Homogeneous Rabbit Antihapten Antibody Populations. III. NH_2-terminal Light Chain Sequence Analyses of Focused Anti-*p*-Azophenyltrimethylammonium and Anti-*p*-Azobenzenearsonate Antibody Fractions ... 7051

YAMASHITA, KAMEJIRO, AND JAMES B. FIELD. Elevation of Cyclic Guanosine 3′,5′-Monophosphate Levels in Dog Thyroid Slices Caused by Acetylcholine and Sodium Fluoride ... 7062

HOCHSTADT-OZER, JOY, AND MICHAEL CASHEL. The Regulation of Purine Utilization in Bacteria. V. Inhibition of Purine Phosphoribosyltransferase Activities and Purine Uptake in Isolated Membrane Vesicles by Guanosine Tetraphosphate ... 7067

BOCKAERT, JOEL, CHRISTIAN ROY, AND SERGE JARD. Oxytocin-sensitive Adenylate Cyclase in Frog Bladder Epithelial Cells. Role of Calcium, Nucleotides, and Other Factors in Hormonal Stimulation ... 7073

OTTEN, JACQUES, GEORGE S. JOHNSON, AND IRA PASTAN. Regulation of Cell Growth by Cyclic Adenosine 3′,5′-Monophosphate. Effect of Cell Density and Agents Which Alter Cell Growth on Cyclic Adenosine 3′,5′-Monophosphate Levels in Fibroblasts ... 7082

AINSLIE, G. ROBERT, JR., JONATHAN P. SHILL, AND KENNETH E. NEET. Transients and Cooperativity. A Slow Transition Model for Relating Transients and Cooperative Kinetics of Enzymes ... 7088

O'LEARY, MARION H., AND JOSEPH M. MALIK. Kinetics and Mechanism of the Binding of Pyridoxal 5′-Phosphate to Apoglutamate Decarboxylase. Evidence for a Rate-determining Conformation Change ... 7097

COMMUNICATION

HINSON, JACK A., AND ROBERT A. NEAL. An Examination of the Oxidation of Aldehydes by Horse Liver Alcohol Dehydrogenase ... 7106

CORRECTIONS

MARSHALL, MARGARET, AND PHILIP P. COHEN. Ornithine Transcarbamylase from *Streptococcus faecalis* and Bovine Liver. II. Multiple Binding Sites for Carbamyl-P and L-Norvaline, Correlation with Steady State Kinetics. Vol. 247, 1664 (1972) ... 7108

MOMOSE, KAZUTAKA, AND HARRY RUDNEY. 3-Polyprenyl-4-hydroxybenzoate Synthesis in the Inner Membrane of Mitochondria from *p*-Hydroxybenzoate and Isopentenylpyrophosphate. A Demonstration of Isoprenoid Synthesis in Rat Liver Mitochondria. Vol. 247, 3930 (1972) ... 7108

November 25, 1972

PRINTZ, MORTON P., AND ANNE D. GOUNARIS. Substrate- and Inhibitor-induced Conformational Changes in

Enzymes Measured by Tritium-Hydrogen Exchange. II. Yeast Pyruvate Decarboxylase II 7109

MUZYCZKA, NICHOLAS, RONALD L. POLAND, AND MAURICE J. BESSMAN. Studies on the Biochemical Basis of Spontaneous Mutation. I. A Comparison of the Deoxyribonucleic Acid Polymerases of Mutator, Antimutator, and Wild Type Strains of Bacteriophage T4 7116

SPECTOR, THOMAS, AND VINCENT MASSEY. *p*-Hydroxybenzoate Hydroxylase from *Pseudomonas fluorescens*. Reactivity with Oxygen 7123

RIGGS, THOMAS R., MARY W. PAN, AND HSIEN W. FENG. Transport of Amino Acids into the Estrogen-primed Uterus. III. Effect of the Level of Extracellular Sodium Ion 7128

BARKER, ROBERT, KENNETH W. OLSEN, JOEL H. SHAPER, AND ROBERT L. HILL. Agarose Derivatives of Uridine Diphosphate and *N*-Acetylglucosamine for the Purification of a Galactosyltransferase 7135

REED, DAN W., AND GERALD A. PETERS. Characterization of the Pigments in Reaction Center Preparations from *Rhodopseudomonas spheroides* 7148

RAGHAVAN, SRINIVASA, DAVID RHOADS, AND JULIAN KANFER. *In Vitro* Incorporation of [^{14}C]Serine, [^{14}C]Ethanolamine, and [^{14}C]Choline into Phospholipids of Neuronal and Glial-enriched Fractions from Rat Brain by Base Exchange 7153

KREDICH, NICHOLAS M., BRUCE S. KEENAN, AND LINDA J. FOOTE. The Purification and Subunit Structure of Cysteine Desulfhydrase from *Salmonella typhimurium* 7157

CHENG, KWONG-WAH, AND JOHN G. PIERCE. The Reaction of Tetranitromethane with Pituitary, Luteinizing, and Thyroid-stimulating Hormones 7163

CHERN, CHING J., MARVIN B. RITTENBERG, AND JOHN A. BLACK. Purification of Human Erythrocyte Pyruvate Kinase 7173

MORGAN, WILLIAM T., AND URSULA MULLER-EBERHARD. Interactions of Porphyrins with Rabbit Hemopexin 7181

STRITTMATTER, PHILIPP, MICHAEL J. ROGERS, AND LAWRENCE SPATZ. The Binding of Cytochrome b_5 to Liver Microsomes 7188

BEUTLER, ERNEST, AND WANDA KUHL. Purification and Properties of Human α-Galactosidases 7195

WETTENHALL, RICHARD E. H., AND IRA G. WOOL. Reassociation of Eukaryotic Ribosomal Subunits. Kinetics of Reassociation; Role of Deacylated Transfer Ribonucleic Acid; Effect of Cycloheximide 7201

MAJUMDER, GOPAL C., AND ROGER W. TURKINGTON. Hormone-dependent Phosphorylation of Ribosomal and Plasma Membrane Proteins in Mouse Mammary Gland *in Vitro* 7207

BUCKLEY, J. THOMAS, AND JOHN N. HAWTHORNE. Erythrocyte Membrane Polyphosphoinositide Metabolism and the Regulation of Calcium Binding 7218

MORRISETT, JOEL D., AND CLARENCE A. BROOMFIELD. A Comparative Study of Spin-labeled Serine Enzymes: Acetylcholinesterase, Trypsin, α-Chymotrypsin, Elastase, and Subtilisin 7224

DEITRICH, RICHARD A., ALLAN C. COLLINS, AND V. GENE ERWIN. Genetic Influence upon Phenobarbital-induced Increase in Rat Liver Supernatant Aldehyde Dehydrogenase Activity 7232

YIP, YUM KEUNG, MARCEL WAKS, AND SHERMAN BEYCHOK. Influence of Prosthetic Groups on Protein Folding and Subunit Assembly. I. Conformational Differences between Separated Human α- and β-Globins 7237

REDDY, RAMACHANDRA, TAE SUK RO-CHOI, DALE HENNING, HIROTOSHI SHIBATA, YONG C. CHOI, AND HARRIS BUSCH. Modified Nucleosides of Nuclear and Nucleolar Low Molecular Weight Ribonucleic Acid 7245

ESFAHANI, MOJTABA, PETER D. CROWFOOT, AND SALIH J. WAKIL. Molecular Organization of Lipids in *Escherichia coli* Membranes. II. Effect of Phospholipids on Succinic-Ubiquinone Reductase Activity 7251

KLEIN, WILLIAM L., AND PAUL D. BOYER. Energization of Active Transport by *Escherichia coli* 7257

SHIN, YOON SOOK, KARL ULRICH BUEHRING, AND E. L. R. STOKSTAD. Separation of Folic Acid Compounds by Gel Chromatography on Sephadex G-15 and G-25. 7266

BERGLUND, OVE. Ribonucleoside Diphosphate Reductase Induced by Bacteriophage T4. I. Purification and Characterization 7270

BERGLUND, OVE. Ribonucleoside Diphosphate Reductase Induced by Bacteriophage T4. II. Allosteric Regulation of Substrate Specificity and Catalytic Activity 7276

BALTIMORE, DAVID, AND DONNA F. SMOLER. Association of an Endoribonuclease with the Avian Myeloblastosis Virus Deoxyribonucleic Acid Polymerase 7282

KENT, S. SHERRILL. Photosynthesis in the Higher Plant *Vicia faba*. I. Anomalous Distributions of $^{14}CO_2$-Isotope in Citrate and Glutamate 7288

KENT, S. SHERRILL. Photosynthesis in the Higher Plant *Vicia faba*. II. The Non-Calvin Cycle Origin of Acetate and Its Metabolic Relationship to the Photosynthetic Origin of Formate 7293

RIDLINGTON, JAMES W., AND LARRY G. BUTLER. Yeast Inorganic Pyrophosphatase. I. Binding of Pyrophosphate, Metal Ion, and Metal Ion-Pyrophosphate Complexes 7303

MOE, OWEN A., AND LARRY G. BUTLER. Yeast Inorganic Pyrophosphatase. II. Kinetics of Mg^{2+} Activation 7308

MOE, OWEN A., AND LARRY G. BUTLER. Yeast Inorganic Pyrophosphatase. III. Kinetics of Ca^{2+} Inhibition 7315

TAYLOR, W. JAPE, CAROLINE W. EASLEY, AND HYRAM KITCHEN. Structural Evidence for Heterogeneity of Two Hemoglobin α Chain Gene Loci in White-tailed Deer 7320

GUYNN, ROBERT W., DULCE VELOSO, AND RICHARD L. VEECH. The Concentration of Malonyl-Coenzyme A and the Control of Fatty Acid Synthesis *in Vivo* 7325

CASSOLY, ROBERT, AND QUENTIN H. GIBSON. The Kinetics of Ligand Binding to Hemoglobin Valency Hybrids and the Effect of Anions 7332

WILSON, JEAN D., AND JOSEPH L. GOLDSTEIN. Evidence for Increased Cytoplasmic Androgen Binding in the Submandibular Gland of the Mouse with Testicular Feminization 7342

GOLDBERG, ISRAEL, AND KONRAD BLOCH. Fatty Acid Synthetases in *Euglena gracilis* 7349

HUANG, YEH ZEN, AND ESMOND E. SNELL. D-Serine Dehydratase from *Escherichia coli*. IV. Comparative Sequences of Pyridoxylpeptides Derived from the Active Site and from an Inhibitory Site of the Enzyme 7358

VIDALI, GIORGIO, LIDIA C. BOFFA, AND VINCENT G. ALLFREY. Properties of an Acidic Histone-binding Protein Fraction from Cell Nuclei. Selective Precipitation and Deacetylation of Histones F2A1 and F3 7365

KEIRNS, JAMES J., AND JUI H. WANG. Studies on Nicotinamide Adenine Dinucleotide Phosphate Reductase of Spinach Chloroplasts 7374

TAYLOR, BARRY L., ROLAND E. BARDEN, AND MERTON F. UTTER. Identification of the Reacting Form of Pyruvate Carboxylase 7383

NOEL, J. K. FULLER, AND M. J. HUNTER. Bovine Mercaptalbumin and Non-mercaptalbumin Monomers. Interconversions and Structural Differences 7391

MILLER, RICHARD E., AND EARL R. STADTMAN. Glutamate Synthase from *Escherichia coli*. An Iron-Sulfide Flavoprotein 7407

KATO, KANEFUSA, AND JONATHAN S. BISHOP. Glycogen Synthetase-D Phosphatase. I. Some New Properties of the Partially Purified Enzyme from Rabbit Skeletal Muscle 7420

MATHEWS, CHRISTOPHER K. Biochemistry of Deoxyribonucleic Acid-defective Amber Mutants of Bacteriophage T4. III. Nucleotide Pools 7430

COMMUNICATION

MAHLER, HENRY R., KARL DAWIDOWICZ, AND FRED FELDMAN. Formate as a Specific Label for Mitochondrial Translational Products 7439

KLAGSBURN, MICHAEL. The contrast between the Methylation of Transfer Ribonucleic Acid *in Vivo* and *in Vitro* by Normal and SV40 Transformed 3T3 Cells 7443

SHORT, STEVEN A., DAVID C. WHITE, AND H. RONALD KABACK. Mechanisms of Active Transport in Isolated Bacterial Membrane Vesicles. IX. The Kinetics and Specificity of Amino Acid Transport in *Staphylococcus aureus* Membrane Vesicles 7452

FRITCHIE, CHARLES J., JR. The Structure of a Metal-Flavin Complex. 10-Methylisoalloxazine Silver Nitrate 7459

TANAKA, KAY. On the Mode of Action of Hypoglycin A. III. Isolation and Identification of *cis*-4-Decene-1,10-dioic, *cis,cis*-4,7-Decadiene-1,10-dioic, *cis*-4-Octene-1,8-dioic, Glutaric, and Adipic Acids, *N*-(Methylenecyclopropyl)acetylglycine, and *N*-Isovalerylglycine from Urine of Hypoglycine A-treated Rats 7465

BLECHER, MELVIN, AND NANCY H. HUNT. Enzymatic Deacylation of Mono- and Dibutyryl Derivatives of Cyclic Adenosine 3′,5′-Monophosphate by Extracts of Rat Tissues 7479

OLSON, JOHN S., QUENTIN H. GIBSON, RONALD L. NAGEL, AND HOWARD B. HAMILTON. The Ligand-binding Properties of Hemoglobin Hiroshima ($\alpha_2\beta_2^{146\ asp}$) 7485

ESDERS, THEODORE W., AND ROBLEY J. LIGHT. Occurrence of a Uridine Diphosphate Glucose:Sterol Glucosyltransferase in *Candida bogoriensis* 7494

BAUGH, ROBERT J., AND C. G. TROWBRIDGE. Calorimetry of Some Trypsin-Trypsin Inhibitor Reactions 7498

AARONSON, ROBERT P., AND CARL FRIEDEN. Rabbit Muscle Phosphofructokinase: Studies on the Polymerization. The Behavior of the Enzyme at pH 8, pH 6, and Intermediate pH Values 7502

LUX, SAMUEL E., KATHRYN M. JOHN, AND H. BRYAN BREWER, JR. Isolation and Characterization of Apo-Lp-Gln-II (ApoA-II), a Plasma High Density Apolipoprotein Containing Two Identical Polypeptide Chains 7510

LUX, SAMUEL E., KATHRYN M. JOHN, ROSEMARY RONAN, AND H. BRYAN BREWER, JR. Isolation and Characterization of the Tryptic and Cyanogen Bromide Peptides of ApoLp-Gln-II (ApoA-II), a Plasma High Density Apolipoprotein 7519

GRAY, RICHARD W., JOHN L. OMDAHL, JACOB G. GHAZARIAN, AND HECTOR F. DELUCA. 25-Hydroxycholecalciferol-1-hydroxylase. Subcellular Location and Properties 7528

LUDENS, JAMES H., JAMES R. DEVRIES, AND DARRELL D. FANESTIL. Criteria for Affinity Chromatography of Steroid-binding Macromolecules 7533

ROON, ROBERT J., JENNIFER HAMPSHIRE, AND BRUCE LEVENBERG. Urea Amidolyase. The Involvement of Biotin in Urea Cleavage 7539

LI, JEANNE B., AND W. EUGENE KNOX. Titration of Tryptophan Oxygenase Antigen by Immunoinhibition 7546

LI, JEANNE B., AND W. EUGENE KNOX. Inactivation of Tryptophan Oxygenase *in Vivo* and *in Vitro* 7550

SHEMISA, OTHMAN A., JOHN M. HAPPY, AND LEONARD A. FAHIEN. Reaction between Reduced Diphosphopyridine Nucleotide and Glutamate Oxalacetate Transaminases 7556

TALLMAN, JOHN F., AND ROSCOE O. BRADY. The Catabolism of Tay-Sachs Ganglioside in Rat Brain Lysosomes 7570

REDKAR, VILAS D., AND UMAKANT W. KENKARE. Bovine Brain Mitochondrial Hexokinase. Solubilization, Purification, and Role of Sulfhydryl Residues 7576

SELA, BEN-AMI, HALINA LIS, AND LEO SACHS. Enzymatic Hydrolysis of Uridine Diphosphate-*N*-acetyl-D-galactosamine and Uridine Diphosphate-*N*-acetyl-D-glucosamine by Normal Cells, and Blocks in This Hydrolysis in Transformed Cells and Their Revertants 7585

GIELEN, JACQUES E., AND DANIEL W. NEBERT. Aryl Hydrocarbon Hydroxylase Induction in Mammalian Liver Cell Culture. III. Effects of Various Sera, Hormones, Biogenic Amines, and Other Endogenous Compounds on the Enzyme Activity 7591

RITTER, PRESTON O., AND K. BRUCE JACOBSON. Interactions of Phenylalanyl Transfer Ribonucleic Acid Synthetase of *Neurospora crassa* with Valyl Transfer Ribonucleic Acid of *Escherichia coli* 7603

SAVAGE, C. RICHARD, JR., AND STANLEY COHEN. Epidermal Growth Factor and a New Derivative. Rapid Isolation Procedures and Biological and Chemical Characterization 7609

SAVAGE, C. RICHARD, JR., TADASHI INAGAMI, AND STANLEY COHEN. The Primary Structure of Epidermal Growth Factor 7612

HOLMES, PAUL E., AND SYDNEY C. RITTENBERG. The Bacterial Oxidation of Nicotine. VII. Partial Purification and Properties of 2,6-Dihydroxypyridine Oxidase 7622

HOLMES, PAUL E., SYDNEY C. RITTENBERG, AND HANS-JOACHIM KNACKMUSS. The Bacterial Oxidation of Nicotine. VIII. Synthesis of 2,3,6-Trihydroxypyridine and Accumulation and Partial Characterization of the Product of 2,6-Dihydroxypyridine Oxidation 7628

KYTE, JACK. The Titration of the Cardiac Glycoside Binding Site of the ($Na^+ + K^+$)-Adenosine Triphosphatase 7634

KYTE, JACK. Properties of the Two Polypeptides of Sodium- and Potassium-dependent Adenosine Triphosphatase 7642

BECHTOLD, MARY M., CONSTANCE V. DELWICHE, KAREN COMAI, AND JAMES L. GAYLOR. Investigation of the Component Reactions of Oxidative Sterol Demethylation. Role of an Endogenous Microsomal Source of Reducing Equivalents 7650

NELSON, NATHAN, HANNAH NELSON, AND EFRAIM RACKER. Partial Resolution of the Enzymes Catalyzing Photophosphorylation. XII. Purification and Properties of an Inhibitor Isolated from Chloroplast Coupling Factor 1 7657

HUANG, WAI MUN, AND I. R. LEHMAN. On the Direction of Translation of the T4 Deoxyribonucleic Acid Polymerase Gene *in Vivo* 7663

BARCHI, ROBERT L., AND PETER E. BRAUN. A Membrane-associated Thiamine Triphosphatase from Rat Brain. Properties of the Enzyme 7668

BROWN, DAVID G., AND DONALD S. COFFEY. Effects of Polyinosinic Acid and Polycytidylic Acid on the Deoxyribonucleic Acid Template Activity of Isolated Nuclei and Soluble Chromatin from Rat Liver 7674

BERGER, EDWARD A., AND LEON A. HEPPEL. A Binding Protein Involved in the Transport of Cystine and Diaminopimelic Acid in *Escherichia coli* 7684

ALLEN, ROBERT H., AND PHILIP W. MAJERUS. Isolation of Vitamin B_{12}-binding Proteins Using Affinity Chromatography. I. Preparation and Properties of Vitamin B_{12}-Sepharose 7695

ALLEN, ROBERT H., AND PHILIP W. MAJERUS. Isolation of Vitamin B_{12}-binding Proteins Using Affinity Chromatography. II. Purification and Properties of a Human Granulocyte Vitamin B_{12}-binding Protein 7702

ALLEN, ROBERT H., AND PHILIP W. MAJERUS. Isolation of Vitamin B_{12}-binding Proteins Using Affinity Chromatography. III. Purification and Properties of Human Plasma Transcobalamin II 7709

CHANG, LUCY M. S., G. R. CASSANI, AND F. J. BOLLUM. Deoxynucleotide-polymerizing Enzymes of Calf Thymus Gland. VII. Replication of Homopolymers 7718

BAKER, JOHN J., INGMING JENG, AND H. ALBERT BARKER. Purification and Properties of L-*erythro*-3,5-Diaminohexanoate Dehydrogenase from a Lysine-fermenting *Clostridium* 7724

RADCLIFFE, ROBERT D., AND PETER G. BARTON. The Purification and Properties of Activated Factor X. Bovine Factor X Activated with Russell's Viper Venom 7735

SARKAR, PRANAB K., DONALD A. FISCHMAN, EUGENE GOLDWASSER, AND ARON A. MOSCONA. Isolation and Characterization of Glutamine Synthetase from Chicken Neural Retina 7743

HOLCENBERG, JOHN S., DAVID C. TELLER, JOSEPH ROBERTS, AND WILLIAM C. DOLOWY. Physical Properties of *Acinetobacter* Glutaminase-Asparaginase with Antitumor Activity 7750

COHEN, HARVEY J., SYLVIA BETCHER-LANGE, DALE L.

KESSLER, AND K. V. RAJAGOPALAN. Hepatic Sulfite Oxidase. Congruency in Mitochondria of Prosthetic Groups and Activity 7759

JONAS, ANA. Physiochemical Properties of Bovine Serum High Density Lipoprotein 7767

JONAS, ANA. Studies on the Structure of Bovine Serum High Density Lipoprotein Using Covalently Bound Fluorescent Probes 7773

GLOSSMANN, HARTMUT, AND DAVID M. NEVILLE, JR. Phlorizin Receptors in Isolated Kidney Brush Border Membranes 7779

CORBIN, JACKIE D., CHARLES O. BROSTROM, CAROL A. KING, AND EDWIN G. KREBS. Studies on the Adenosine 3',5'-Monophosphate-dependent Protein Kinases of Rabbit Skeletal Muscle 7790

LYNCH, MARJORIE C., AND ALLEN T. PHILLIPS. Urocanase of *Pseudomonas putida*. Subunit Structure and Origin of Enzyme-bound α-Ketobutyrate 7799

SAKIYAMA, SHIGERU, AND JOHN M. BUCHANAN. Control of the Synthesis of T4 Phage Deoxynucleotide Kinase Messenger Ribonucleic Acid *in Vivo* 7806

BAILIN, GARY, AND MICHAEL BÁRÁNY. Thiolysis of Dinitrophenylated Myosin with Restoration of Adenosine Triphosphatase Activity 7815

LODISH, HARVEY F., AND DAVID G. NATHAN. Regulation of Hemoglobin Synthesis. Preferential Inhibition of α and β Globin Synthesis 7822

PINKOWITZ, RICHARD A., AND PHILIP AISEN. Zero-Field Splittings of Iron Complexes of Transferrins .. 7830

COMMUNICATION

IKEMOTO, NORIAKI, GOPAL MOHAN BHATNAGAR, BELA NAGY, AND JOHN GERGELY. Interaction of Divalent Cations with the 55,000-Dalton Protein Component of the Sarcoplasmic Reticulum. Studies of Fluorescence and Circular Dichroism 783

December 25, 1972

O'SULLIVAN, WILLIAM J., GEORGE H. REED, KENNETH H. MARSDEN, GEOFFREY R. GOUGH, AND CHOY SOONG LEE. The Binding of Manganese-Nucleoside Diphosphates to Creatine Kinase as Determined by Proton Relaxation Rate Measurements 7839

LOMBARDI, F. J., AND H. RONALD KABACK. Mechanisms of Active Transport in Isolated Bacterial Membrane Vesicles. VIII. The Transport of Amino Acids by Membranes Prepared from *Escherichia coli* 7844

WALSH, CHRISTOPHER T., ROBERT H. ABELES, AND H. RONALD KABACK. Mechanisms of Active Transport in Isolated Bacterial Membrane Vesicles. X. Inactivation of D-Lactate Dehydrogenase and D-Lactate Dehydrogenase-coupled Transport in *Escherichia coli* Membrane Vesicles by an Acetylenic Substrate .. 7858

KIMMEL, MATTHEW T., AND THOMAS H. PLUMMER, JR. Identification of a Glutamic Acid at the Active Center of Bovine Carboxypeptidase B 7864

THOMAS, JOHN O., AND STUART J. EDELSTEIN. Observation of the Dissociation of Unliganded Hemoglobin .. 7870

WRIGHT, BARBARA E., AND GARY L. GUSTAFSON. Expansion of the Kinetic Model of Differentiation in *Dictyostelium discoideum* 7875

VANDENHEEDE, JACKIE R., AHMED I. AHMED, AND ROBERT E. FEENEY. Structure and Role of Carbohydrate in Freezing, Point-depressing, Glycoproteins from an Antarctic Fish 7885

BEATO, MIGUEL, AND PHILIP FEIGELSON. Glucocorticoid-Binding Proteins of Rat Liver Cytosol. I. Separation and Identification of the Binding Proteins 7890

KOBLINSKY, MARJORIE, MIGUEL BEATO, MOHAMMED KALIMI, AND PHILIP FEIGELSON. Glucocorticoid-binding Proteins of Rat Liver Cytosol. II. Physical Characterization and Properties of the Binding Proteins 7897

COLEN, ALAN H., RUSSELL A. PROUGH, AND HARVEY F. FISHER. The Mechanism of Glutamate Dehydrogenase Reaction. IV. Evidence for Random and Rapid Binding of Substrate and Coenzyme in the Burst Phase 7905

SCHNEIDER, PETER B. A Site of Action of Thyrotropin. Stimulation of the Conversion of Glycerophosphate to Phosphatidic Acid in Bovine Thyroid Slices 7910

BRADY, FRANK O., MARIE E. MONACO, HENRY J. FORMAN, GUNTHER SCHUTZ, AND PHILIP FEIGELSON. On the Role of Copper in Activation of and Catalysis by Tryptophan-2,3-dioxygenase 7915

KINGSTON, HENRY S. CLAUDIA NOYES, ASIL LAHIRI, AND ROBERT L. STEINRIKSON. Primary Structure of *Escherichia coli* Glutamine Synthetase. III. Chemical Evidence for Subunit Identity; Amino Acid Sequences at the NH_2 and COOH Termini 7923

TALLEY, DEANNA J., LARRY H. WHITE, AND ROBERT R. SCHMIDT. Evidence for NADH- and NADPH-specific Isozyme of Glutamate Dehydrogenase and the Continuous Inducibility of the NADPH-specific Isozyme throughout the Cell Cycle of the Eucaryote *Chlorella* 7927

TAGER, HOWARD S., AND DONALD F. STEINER. Primary Structures of the Proinsulin Connecting Peptides of the Rat and the Horse 7936

BREWER, JOHN M., AND RICHARD J. DESA. Stopped Flow Spectrophotometric Studies of Yeast Enolase Subunit Interaction 7941

CHANG, LUCY M. S., AND F. J. BOLLUM. Variation of Deoxyribonucleic Acid Polymerase Activities during Rat Liver Degeneration 7948

JONES, RICHARD F., AND JERRY B. LINGREL. Peptide Analysis of the Mouse Hemoglobin Messenger Ribonucleic Acid-directed Products Synthesized in Mammalian and Avian Cell-free Systems 7951

LEE, LEO P. K., AND IRVING B. FRITZ. Studies on Spermatogenesis in Rats. V. Increased Thermal Lability of Lysosomes from Testicular Germinal Cells and Its Possible Relationship to Impairments in Spermatogenesis in Cryptochidism 7956

LOUIE, ANDREW J., AND GORDON H. DIXON. Kinetics of Enzymatic Modification of the Protamines and a Proposal for Their Binding to Chromatin 7962

CATTERALL, WILLIAM A., AND PETER L. PEDERSEN. Adenosine Diphosphatase from Rat Liver Mitochondria. II. Interaction with Adenosine Diphosphate .. 7969

KLINMAN, JUDITH P. The Mechanism of Enzyme-catalyzed Reduced Nicotinamide Adenine Dinucleotide-dependent Reductions. Substituent and Isotope Effects in the Yeast Alcohol Dehydrogenase Reaction 7977

MERRICK, WILLIAM C., AND LEON S. DURE, III. The Developmental Biochemistry of Cotton Seed Embryogenesis and Germination. IV. Levels of Cytoplasmic and Chloroplastic Transfer Ribonucleic Acid Species 7988

FABER, LEE E., MARY L. SANDMANN, AND HOMER E. STAVELY. Progesterone Binding in Uterine Cytosols of the Guinea Pig 8000

FALL, R. RAY, AND P. ROY VAGELOS. Acetyl Coenzyme A Carboxylase. Molecular Forms and Subunit Composition of Biotin Carboxyl Carrier Protein 8005

LIN, LEU-FEN HOU, SHIH-JUNG LAN, ARLAN H. RICHARDSON, AND LAVELL M. HENDERSON. Pyridine Nucleotide Synthesis. Purification of Nicotinamide Mononucleotide Pyrophosphorylase from Rat Erythrocytes 8016

LIN, LEU-FEN HOU, AND LAVELL M. HENDERSON. Pyridinium Precursors of Pyridine Nucleotides in Perfused Rat Kidney and in the Testis 8023

PRICE, E. MARGARET, AND J. F. GIBSON. Electron Paramagnetic Resonance Evidence for a Distinction between the Two Iron-binding Sites in Transferrin and in Conalbumin 8031

TANIGAWA, YOSHINORI, MAKOTO SHIMOYAMA, KAKUO DOHI, AND IWAO UEDA. Purification and Properties of Nicotinamide Deamidase from *Flavobacterium peregrinum* 8036

KELLEMS, ROD E., AND RONALD A. BUTOW. Cytoplasmic-type 80 S Ribosomes Associated with Yeast Mito-

chondria. I. Evidence for Ribosome Binding Sites on Yeast Mitochondria 8043

KLEE, CLAUDE B., AND JULES A. GLADNER. Isolation of a Cystine-Peptide at the Active Site of Histidine Ammonia-Lyase 8051

SJÖBERG, BRITT-MARIE. Studies on the Structure of T4 Thioredoxin. I. Isolation and Amino Acid Sequence of the Peptides Obtained from a Tryptic Digest of the Protein 8058

SJÖBERG, BRITT-MARIE, AND ARNE HOLMGREN. Studies on the Structure of T4 Thioredoxin. II. Amino Acid Sequence of the Protein and Comparison with Thioredoxin from *Escherichia coli* 8063

SWANN, DAVID A., AND ERIC L. RADIN. The Molecular Basis of Articular Lubrication. I. Purification and Properties of a Lubricating Fraction from Bovine Synovial Fluid 8069

STELLWAGEN, EARLE, RICHARD RYSAVY, AND GEORGE BABUL. The Conformation of Horse Heart Apocytochrome *c* 8074

PEARLMAN, WILLIAM H., AND I. F. F. FONG. Steroid Binding. Properties of Some Peptide Fragments of Bovine Serum Albumin Obtained on Peptic Digestion 8078

BUSE, MARIA G., J. FRANK BIGGERS, KAREN H. FRIDERICI, AND JOHN F. BUSE. Oxidation of Branched Chain Amino Acids by Isolated Hearts and Diaphragms of the Rat. The Effect of Fatty Acids, Glucose, and Pyruvate Respiration 8085

LOCKRIDGE, OKSANA, VINCENT MASSEY, AND PATRICK A. SULLIVAN. Mechanism of Action of the Flavoenzyme Lactate Oxidase 8097

BLUMBERG, PETER M., AND JACK L. STROMINGER. Five Penicillin-binding Components Occur in *Bacillus subtilis* Membranes 8107

FLASHNER, MICHAEL, PAUL F. HOLLENBERG, AND MINOR J. COON. Mechanism of Action of Pyruvate Kinase. Role of Sulfhydryl Groups in Catalytic Activity as Determined by Disulfide Interchange 8114

KLEIN, HERBERT A., AND SEVERO OCHOA. Peptide Synthesis by Prokaryotic-Eukaryotic Hybrid Ribosomes 8122

GRAY, GARY R., AND CLINTON E. BALLOU. The 6-*o*-Methylglucose-containing Liptopolysaccharides of *Mycobacterium phlei*. Locations of the Acyl Groups 8129

DUNCAN, BRUCE K., GARY R. DIAMOND, AND MAURICE J. BESSMAN. Regulation of Enzymatic Activity through Subunit Interaction. A Possible Example 8136

MOFFET, FRANK J., TUSN-TIEN WANG, AND WILLIAM A. BRIDGER. Succinyl Coenzyme A Synthetase of *Escherichia coli*. Effects of Phosphoenzyme Formation and of Substrate Binding on the Reactivity and Stability of the Enzyme 8139

GUTHROW, C. EARL, JR., JAMES E. ALLEN, AND HOWARD RASMUSSEN. Phosphorylation of an Endogenous Membrane Protein by an Endogenous, Membrane-associated Cyclic Adenosine 3′,5′-Monophosphate-dependent Protein Kinase in Human Erythrocyte Ghosts 8145

INOUYE, MASAYORI, JÜN SHAW, AND CYNTHIA SHEN. The Assembly of a Structural Lipoprotein in the Envelope of *Escherichia coli* 8154

STENFLO, JOHAN, AND PER-OLOV GANROT. Vitamin K and the Biosynthesis of Prothrombin. I. Identification and Purification of a Dicoumarol-induced Abnormal Prothrombin from Bovine Plasma 8160

STENFLO, JOHAN. Vitamin K and the Biosynthesis of Prothrombin. II. Structural Comparison of Normal and Dicoumarol-induced Bovine Prothrombin 8167

NELSESTUEN, GARY L., AND JOHN W. SUTTIE. The Purification and Properties of an Abnormal Prothrombin Protein Produced by Dicumarol-treated Cows. A Comparison to Normal Prothrombin 8176

LYERLA, JAMES R., JR., AND MURRAY H. FREEDMAN. Spectral Assignment and Conformational Analysis of Cyclic Peptides by Carbon-13 Nuclear Magnetic Resonance 8183

COMMUNICATIONS

BINGHAM, ELIZABETH W., HAROLD M. FARRELL, JR., AND JAY J. BASCH. Phosphorylation of Casein. Role of the Golgi Apparatus 8193

WESTERIK, JUDITH O'CONNOR, AND RICHARD WOLFENDEN. Aldehydes as Inhibitors of Papain 8195

RACKER, EFRAIM. Reconstitution of a Calcium Pump with Phospholipids and a Purified Ca^{++}-Adenosine Triphosphatase from Sarcoplasmic Reticulum 8198

CORRECTIONS

BRICKER, LEE A., AND GERALD S. LEVEY. Evidence for Regulation of Cholesterol and Fatty Acid Synthesis in Liver by Cyclic Adenosine 3′,5 -Monophosphate. Vol. **247**, 4914 (1972) 8201

MARTIN, DAVID W., JR., AND NANCY T. OWEN. Repression and Derepression of Purine Biosynthesis in Mammalian Hepatoma Cells in Culture. Vol. **247**, 5477 (1972) 8201

MCPHERSON, ALEXANDER, JR., AND ALEXANDER RICH. Preliminary X-ray Study of Rabbit Muscle Pyruvate Kinase. Vol. **247**, 1334 (1972) 8201

Author Index 8203

Subject Index 8208